

Chemical Age

Incorporating

PETROCHEMICALS and POLYMERS

2 December 1961, Vol. 88, No. 2012

THE WEEKLY NEWSPAPER OF THE CHEMICAL INDUSTRY

FISONS' CHAIRMAN TO
RETIRE IN 1962 (P. 880)

STEEL GROUP BIDS FOR
MAIN CONTRACTS (P. 885)

BUTYL MARKET (P. 887)

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HOP: 0035/36, 1169

data..

Acetic anhydride
Acetyl acetone
Arsanilic acid
Ascorbic acid
p-Aminobenzoic acid
(PAB) and esters
p-Aminosalicylic acid
(PAS)
Acetyl salicylic acid
Acetophenone
Acetamide
Amethocaine
Amphetamine
Barbiturates (barbitone,
phenobarbitone
thiopentone etc.
Benzene hexachloride
Benzyl chloride
Benzyl cyanide
Chloroform
Chlorobenzene
Caffeine (and
theobromine)
Cetyl chloride
Cyanuric chloride
Cyanoacetic acid,
ethyl cyanoacetate
4- α -Chloropropionic
acid (Dalapon)
Chloroquine
Diketene
D.D.T.
Dodecyl benzene
Dieldrin
Dimethyl sulphate
2, 4-Dithlorophenoxy-
acetic acid

Dicyandiamide
Ethylene diamine
tetracetic acid
Ethyl benzene
Ephedrine
Ethyl malonate
Ethylene oxide
Formaldehyde
Fluoroacetamide
Fluoroacetic acid
Glycerol
Glyceryl stearates
Hydroquinone
p-Hydroxybenzoic acid
and esters
Histamine
Iodised oils
Insulin
Isonicotinic hydrazide
(INH)
Lysine (1-)
Lignocaine
Levulinic acid
Metol
Methionine
Methanol
Methylamines
Methyl bromide
Maleic anhydride
Maleic hydrazide (MH)
Nitrofurans
Nicotinic acid
Nicotinic amide and
diethylamide
Pethidine
Paraform
Papaverine

relating to the chemistry,
manufacture, full process
and chemical engineering
'know-how' and econom-
ics of a wide range of
chemicals including the
following is now available:

Piperazine
Pilocarpine
Phthalic anhydride
Phenylethyl alcohol
Phenol
Phenylacetic acid
Procaine
Parathion
Phenyl mercury acetate
Phenol phthalein
Phloroglucinol
Quinine, cinchonine, etc.
Quotane
Rayon (viscose)
Rutin
Sulphanilamide
Sulphapyridine
(M and B 693)
Sulphathiazole
Sulphadiazine
Sulphamezathine
Sulphapyrazine
Sulphadiazine
Salicylic acid
Salicylamide, Salicyl
diethylamide
Sorbitol
Sodium dodecylbenzene
sulphonate
Strychnine
Thioacetic acid
Tocopherol
Theobromine
Vitamin B 1
Vitamin B 2
Vanillin
Vinyl acetate
p-Xylene

The information offered covers every significant development during the past twelve years. For further details of the above or other processes and service fees write to

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GLASSBLOWING



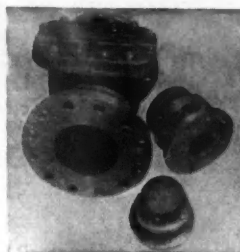
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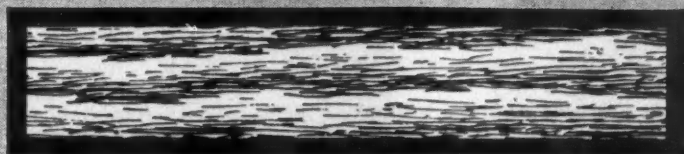
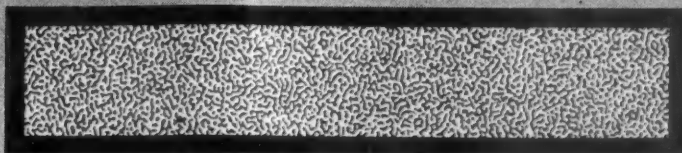
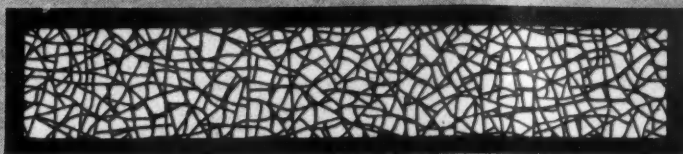
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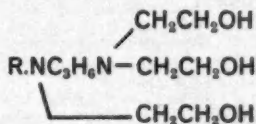


ETHO CHEMICALS

Many uses for 3 new surface active chemicals*

ETHODUOMEEN T/13

Formula:



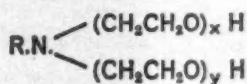
where R denotes tallow fatty acid radical

A double tertiary amine and an intermediary in the synthesis of other products

Corrosion inhibitor in cutting oils, asphalt additive, emulsifier

ETHOMEEN C/25

Formula:



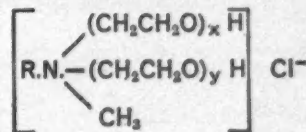
where R denotes the coco alkyl group and $x + y = 15$

A water-soluble tertiary amine which behaves like a nonionic compound

Detergent in metal cleaning formulations, additive in viscose spinning, and in paint strippers

ETHOQUAD C/25

Formula:



An undiluted quaternary compound liquid at room temperature

Emulsifier, bactericide, anti-static agent

* Now available in large quantities.

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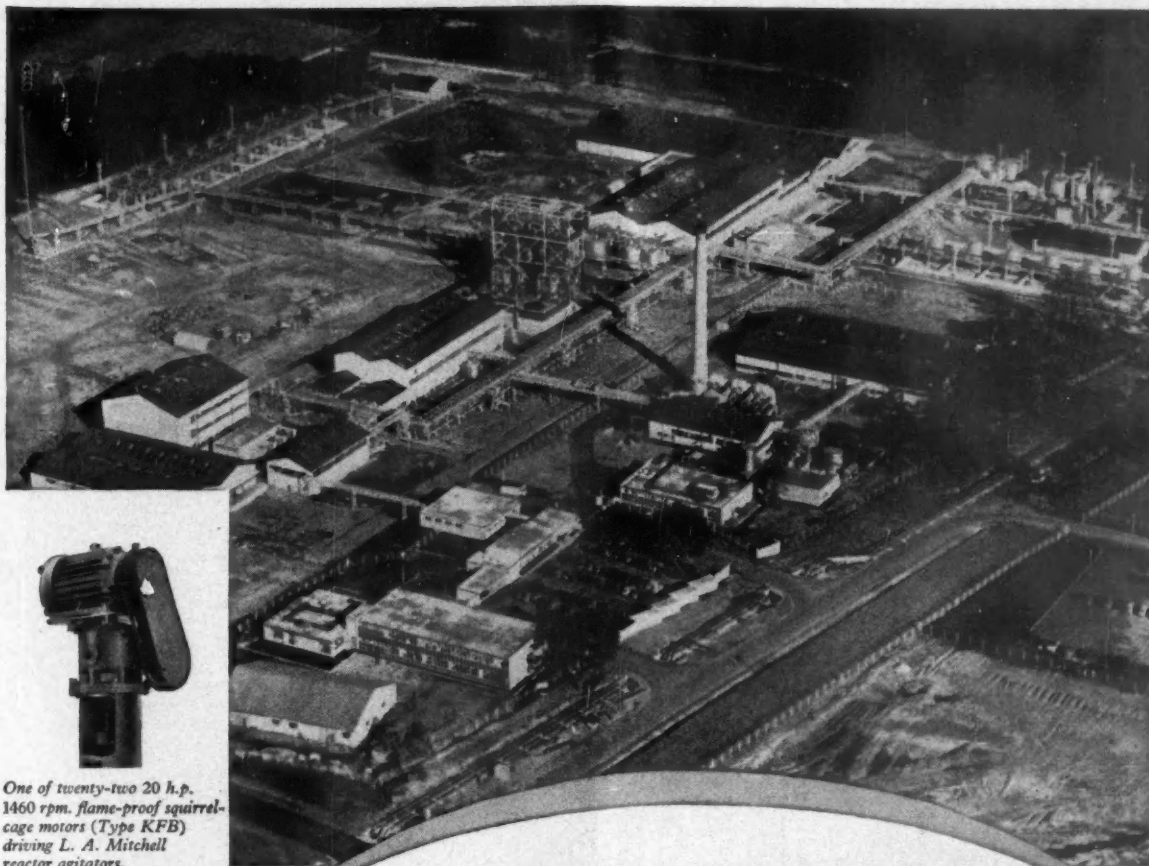
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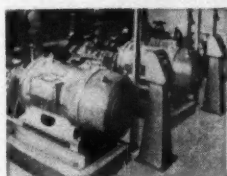
PHOENIX CHEMICAL WORKS, UPPER NORTH STREET, LONDON, E.14.

Telephone: EAST 2673 (5 lines)

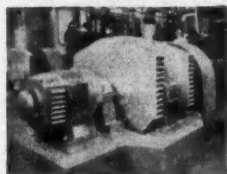
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Two of four 425 h.p. 300 rpm. salient pole synchronous motors (Type SM) with overhung exciter driving Laurence Sterne refrigeration compressors.

Over 850 AEI Motors for one of the world's most modern synthetic rubber plants

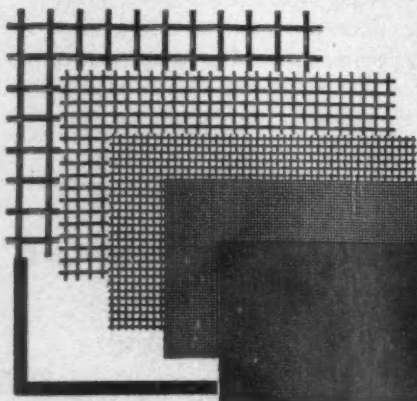
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AEI
Associated Electrical Industries Limited
Motor and Control Gear Division
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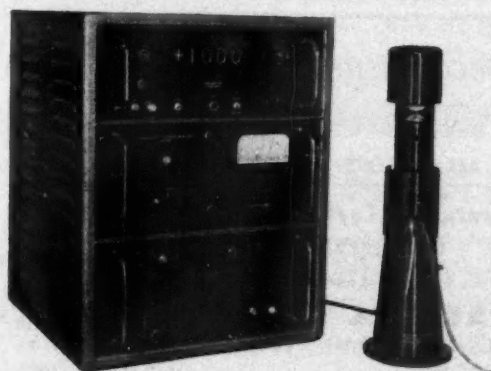
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THE OPTICAL
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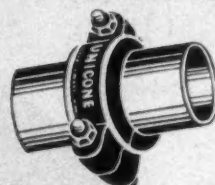
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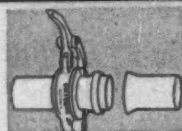
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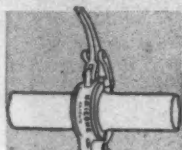
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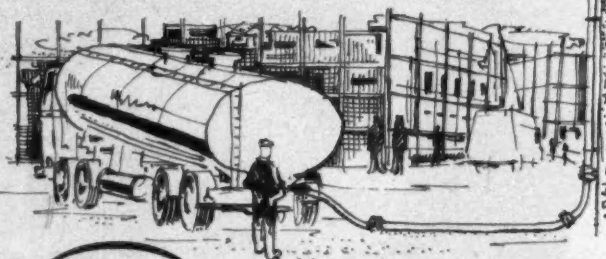
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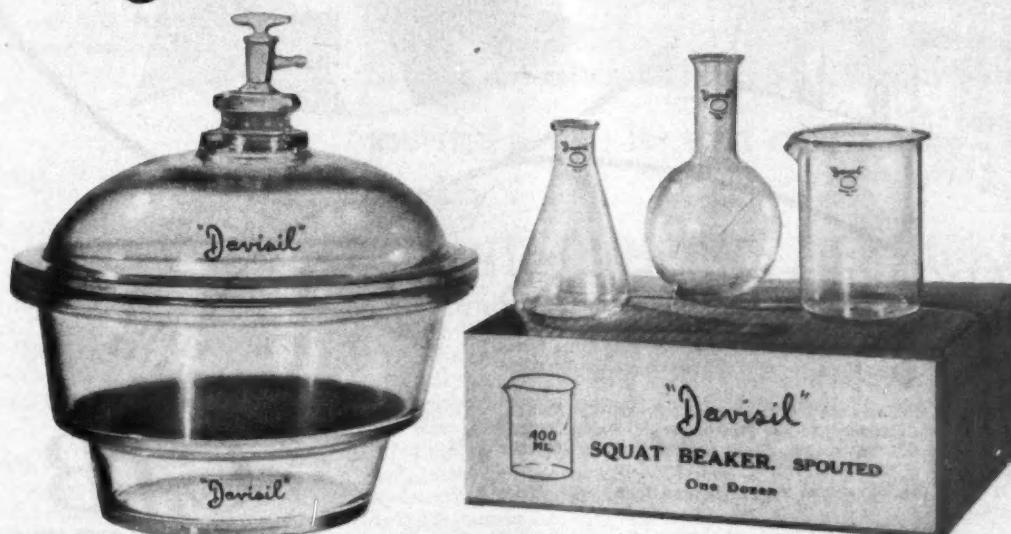
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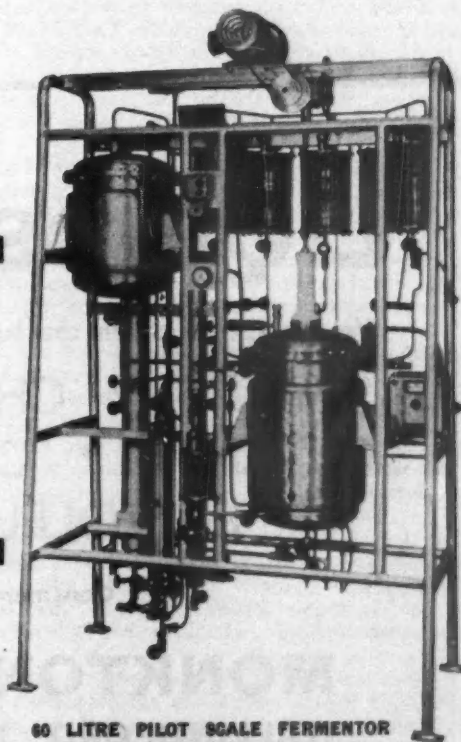
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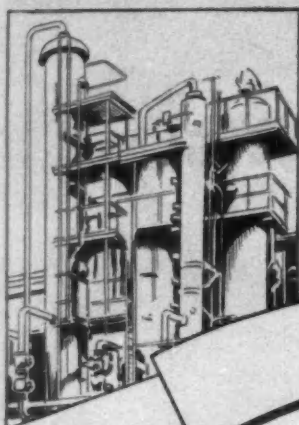
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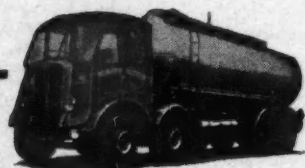
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Chemical Age

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ANTI-DUMPING MEASURES

FOLLOWING the Board of Trade's announcement on 22 November that it was considering an application of an anti-dumping duty on polythene imported from the U.S., comes news that the Federal German chemical industry has now requested the Ministry for Economic Affairs to introduce an anti-dumping duty on polythene imported at "abnormally low prices" from the U.S.

France has already taken this action (see *CHEMICAL AGE*, 25 November, p. 852 and 11 November, p. 754) and it is believed that the Netherlands is also planning the introduction of an anti-dumping duty.

Application to the Board of Trade was made by I.C.I., Monsanto Chemicals and Union Carbide, and covers polythene imported in blocks, lumps, powders (including moulding powders), granules, flake and similar bulk forms. This application may be extended to include other countries supplying such products to Britain at prices which appear to be dumped or subsidised.

Any representations made in connection with this application should be submitted in writing to the B.o.T., Tariff and Import Policy Division, Room 3139, Horse Guards Avenue, London, S.W.1, not later than 8 December. A statement of the applicants' case will be made available to all interested parties wishing to make representations if they undertake to treat the statement as strictly confidential and allow their comments to be passed on to the applicants.

U.S. prices quoted in West Germany are said to be 40% and more below U.S. home levels. In September, U.S. high-pressure polythene was being offered in West Germany at DM 1.55/kg, plus 15% duty and 4% turnover compensation tax—a price at which local producers say they cannot compete. Imports of the high pressure material from the U.S. into West Germany totalled some 5,000 tonnes for the first-half of 1961; the 1961 total is expected to exceed by a large margin the 9,000 tonnes total recorded for the whole of 1960.

As suggested in *CHEMICAL AGE* last week, p. 852, West German producers are also concerned about what they claim to be the dumping of phenol from the U.S. at a price of 11½ cents/lb. c.i.f., compared with a current U.S. domestic price of 14½ to 16½ cents. American exports of phenol in the first nine months of this year totalled 26.8 million lb., compared with 35.3 million lb. in the same period of last year. It is thought that in view of this cut back in exports, producers are trying to retain their share of the European market with reduced prices.

According to *Oil, Paint and Drug Reporter* (13 November), half of the 1961 total was routed to Dutch ports. About 500,000 lb. was shipped directly to West Germany, while Italy, Finland, Denmark and Belgium each took quantities of less than 250,000 lb. Phenol exports are stated to have accounted for about 6% of U.S. production; this year the figure is expected to slip to 5%.

West German phenol producers are likely to raise the question of imports of low-priced phenol at a meeting of the commission of the European Economic Community. The new West German anti-dumping legislation which comes into effect on 1 January will provide a much tougher weapon against dumping.

Sir Clavering to retire next year as Fisons' chairman

AFTER more than 30 years as chairman of Fisons Ltd., Britain's biggest fertiliser producers, Sir Clavering Fison will, at the age of 70, retire in a year's time. He will be succeeded by Lord Netherthorpe, farmer, who as Sir James Tuner, was president of the National Farmers' Union for 16 years. He joined the Fisons board in February 1960 and became deputy chairman in January this year.

Announcement of his retirement, immediately after the 1962 annual general meeting, was given by Sir



Sir Clavering Fison Lord Netherthorpe

Clavering at the annual meeting held at Felixstowe on 24 November, when he also stated that the board had nominated Lord Netherthorpe to succeed him.

Sir Clavering joined the company on 1 January 1919, nearly 43 years ago. Since he became chairman in 1929, the capital has grown from £725,000 to more than £39 million. In the same period net assets have expanded to more than £26 million and annual turnover to more than £54 million, while Fisons investment in research is currently more than £1 million a year. There are now 19 subsidiaries in the U.K. and 21 subsidiary and associated companies overseas.

The period since 1929 has seen the company's biggest growth. Joseph Fison and Co., founded by Joseph Fison, grandfather of the present chairman, amalgamated with two other Suffolk fertiliser firms to form Fison, Packard and Prentice Ltd. with Mr. F. G. C. (now Sir Clavering) Fison as chairman. In 1934, the newly opened works in Ipswich was the first to produce granular superphosphate. By 1944, 32 other fertiliser companies had been acquired. Fisons other companies were also acquired during Sir Clavering's chairmanship—Genatosan in 1937, Bengers and Whiffen and Sons in 1947 and Pest Control in 1954.

The name Fisons Ltd. was adopted in 1942 as was a national sales policy for fertilisers based on the brand name 'Fisons'. The parent company became a holding company in 1960.

Sir Clavering Fison has not only played a leading role in the development of the British fertiliser industry, he has also taken a prominent part in public life. A former High Sheriff of Suffolk,

he is now Deputy Lieutenant for the county. From 1929 to 1931 he was Conservative M.P. for Woodbridge.

Lord Netherthorpe, who is 53, took over his father's 350-acre mixed farm at Anston, near Sheffield, in 1928 when he also gained a B.Sc.(Agric.) at Leeds University. In his 16 years as president of the N.F.U. he played a prominent part in shaping U.K. agricultural policy. He was created a Baron in 1959. His other interests include the joint deputy chairmanship of Richard Costain Ltd., directorships of Lloyds Bank and the Fatstock Marketing Corporation Ltd., and membership of the Western Hemisphere Exports Council, Agricultural Research Council, British Productivity Council and the council of the British Association.

First post-war mercury from China brings U.K. prices down

IMPORTS of mercury from Mainland China—the first since before World War 2—have brought the U.K. price of mercury down from £68 10s-£70 per flask of 76 lb. to £59/flask of 99.9% material ex stock. Trade circles believe that imports from China will continue well into 1962 and that this year they may well amount to 1,000 flasks.

These imports follow shipments received from the Soviet Union which earlier this year were responsible for reduced prices. There are no signs of willingness on the part of Italian producers to lower their prices below about £61/flask, but limited supplies from Spain have been offered at the lower price.

The U.K. market currently takes between 15,000 and 17,000 flasks a year, after taking exports into account; these have been running at the high rate of 8,000 flasks. Free-world demand is estimated at an overall 200,000 flasks/year. Soviet supplies could, it is felt, total between 20,000 to 25,000 flasks in 1962. Representing 10% of the total trade, these shipments will mean that mercury prices are likely to remain unstable for some time. The withdrawal of supplies by Italian firms is not likely to influence a return to higher prices if Soviet sources reach the level estimated for 1962.

A commission of the Italian Chamber of Deputies has approved a draft Bill which will abolish the production tax which Italian manufacturers of mercury now have to pay. This step has been taken to help the Italian industry compete in world markets. Italy has recently experienced a marked drop in exports of mercury. For the first nine months of

H.W.P. to concentrate on specialised equipment

At a meeting of senior management on Tuesday, Head Wrightson Processes Ltd. decided on a policy of concentrating resources on the development of their already wide range of specialist equipment for the chemical industry, and away from 'green gass' refinery contracting. As a result, engineering staff is now being seconded from McKee Head Wrightson Ltd. to H.W.P. McKee-H.W. were formed jointly by H.W.P. and McKee of the U.S. some two years ago to handle projects for complete refinery and petrochemical plants.

Sir John Wrightson, chairman of Head Wrightson and Co. Ltd., the parent company, stated on Tuesday that the development of specialised plant was made more necessary in view of Britain's possible entry into the Common Market.

Agreements with I.C.I.'s Alfloc service on effluent treatment and with Belco of the U.S. on water treatment plant, had widened the group's interests in the petroleum and chemical industries.

1961, exports totalled 863 tonnes valued at 2,797 million lire, a fall of 48% in quantity and of 62% in value compared with the same period of 1960.

Sir William Garrett retires after 26 years

SIR WILLIAM GARRETT, M.B.E., retired on Tuesday this week after 26 years as director of Monsanto Chemicals Ltd. Sir William joined the company in 1917 and was appointed a director in 1935. He is retiring from the board in order to devote more time to his other interests. Sir William was chairman of the Association of British Chemical Manufacturers from 1959-1961 and president of the British Employers' Confederation from 1958-60.



Sir William Garrett J. M. Kershaw

Mr. J. M. Kershaw has been appointed to the board in place of Sir William. He is Monsanto's director of production and joined the company in 1946 as a chemical engineer. He was appointed chief engineer in 1956 and an alternate director in 1960.

PROJECT NEWS

M. Hall design and construction for Enkalon's nylon-6 plant

THE nylon-6 project of **British Enkalon** (see **CHEMICAL AGE**, 1 April 1961, p. 541) is to be developed in three stages. The first stage, scheduled for completion in 1963, will have a capacity of 4½ million lb. of nylon a year. It is estimated that the cost of this stage will be approximately £7,300,000.

It is intended to double the output in the second stage which will be completed in 1967. From the outset the factory will incorporate a number of features required for this expansion so that the cost of doubling the output will be considerably less than that for the first stage. It is estimated that the extra cost at present-day prices will be in the region of £4,500,000. The third stage will increase the output still further, but the company say that it is too early to forecast the extent of this development.

Plans for the construction of the plant have been drawn up in close association with A.K.U. who own 54.8% (the proportion of their holding in British Enka which was recently acquired by Courtaulds). The rest of the British Enkalon shares were offered to British Enka shareholders registered on 17 October (see commercial news).

As revealed in the recent **CHEMICAL AGE** plant survey in the 30 September issue, the contract has been awarded to **Matthew Hall and Co. Ltd.** They will provide design and other services in connection with the construction and equipment of the major part of the factory. The supply and installation of the balance of the plant will be undertaken directly by British Enkalon assisted by A.K.U. and will be the subject of a number of separate contracts.

C.J.B. hold Stengel process for ammonium sulphate

● THE Stengel process for the production of liquid or solid ammonium nitrate has been licensed to **Constructors John Brown Ltd.** by Commercial Solvents of the U.S. C.J.B. will, therefore, soon be adding another major process and plant to those already held.

Off-line process control at I.C.I. Ammonia Works

● THE 803 computer installed at the **I.C.I. Ammonia Works**, Billingham Division, has been processing plant records since the beginning of the year and the benefits are now clearly apparent.

In the carbon dioxide plant, for instance, readings of process variables such as temperature, flow, pressure, etc., are recorded daily. Based on the readings, a few simple calculations are made and then analysed to decide if compensating

action in the plant will be required. Naturally, to be of any value, the results are required within hours of the readings being taken.

Now that the 803 computer is installed the data are transferred to punched cards which are fed into the 803 and analysed; the results are then printed out. This system enables readings taken in the morning to be processed immediately, providing ample time for any required compensating action.

In addition to this off-line process control application, the installation of the 803 has opened up possibilities at the Ammonia Works of analysing other plant records. Activities in other divisions on process investigation, linear programming of ammonia production, gas analysis, multiple regression, analysis of dynamic data and some research projects are likely to absorb further machine time, and a scheme for the processing of staff medical records is being prepared.

C.J.B. gain Gulf and Jet oil terminal contracts

● CONTRACTS for oil terminals have been awarded to **Constructors John Brown Ltd.** by **Jet Petroleum Ltd.** for their terminal at Cardiff and by **Gulf Oil (Great Britain) Ltd.** for Ellesmere Port. Jet have awarded C.J.B. a £250,000 contract for the first phase of their project, which covers tankage, loading bays, pipelines and ancillary works. This

terminal will eventually handle about 60,000 tons.

The Gulf Oil contract covers design and engineering, procurement and construction. The Ellesmere Port terminal is for fuel oils only and will include an Auto-blender designed and supplied by A.C.E. Construction is expected to take about nine months.

Another new contract for C.J.B. is for off-site facilities at the Baglan Bay works of **British Hydrocarbon Chemicals Ltd.** Worth between £250,000 and £500,000, this contract is with B.H.C.'s agents, B.P. Trading Ltd. Construction will take about 12 months; project manager is Mr. J. Szczepanski.

U.A.R. fertiliser contract for Bradley Pulverizer Co.

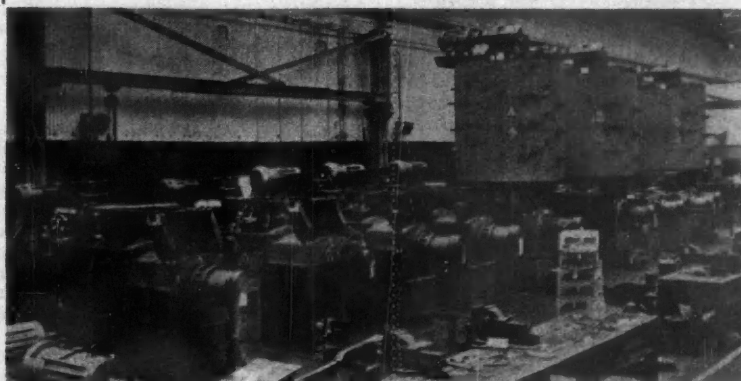
● A CONTRACT worth £170,000 for increasing the capacity of superphosphate manufacture at Kafr-el-Zayat has been placed with **Bradley Pulverizer Co. Ltd.** by Soc. Financière et Industrielle d'Egypte. This extension will use the output of the new 150 tons/day contact sulphuric acid plant being installed by **Simon-Carves Ltd.** Consulting engineers to the Egyptian society are **Cremer and Warner**, 8 Buckingham Palace Gardens, London S.W.1.

Mitchell dryers for Indian rubber works

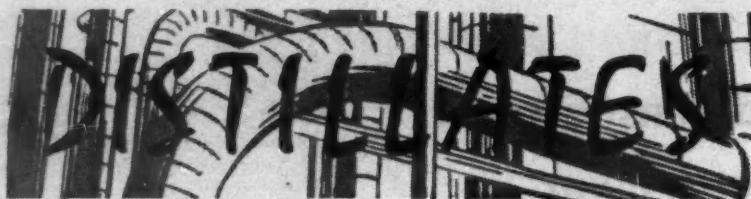
● CONTRACT for two large synthetic rubber dryers has been awarded to **L. A. Mitchell Ltd.**, Manchester and London, by **Lummus Co.** in connection with the plant being constructed for Synthetics and Chemicals at Bareilly, India. The dryers will be supplied under Mitchell's licence agreement with C. G. Sargent, U.S., and will be built in India.

(Continued on page 886)

Rosedowns expellers for oil extraction



Part of the current production line of the Rosedowns Mark II 'Long Cage' Duplex expeller, a medium size, high pressure screw press for the extraction of vegetable oil from all types of oilseeds. The current order book of Rose, Downs and Thompson Limited—a member of the Davy-Ashmore Group—includes contracts worth almost a quarter of a million pounds for these machines. These are all export orders and the expellers will eventually be installed in Egypt, Gambia, Ghana, Lebanon, Nigeria and the Sudan.



★ FARMER Lord Netherthorpe, former president of the National Farmers' Union, will become chairman of one of the world's largest fertiliser groups—Fisons Ltd.—when Sir Clavering Fison, chairman since 1929, retires in a year's time. Lord Netherthorpe will then join the growing ranks of men prominent in other fields who have become chairman of British chemical companies.

Monsanto Chemicals Ltd. started the trend when they appointed Sir Miles Thomas as their chairman in 1956. Well known in publicity and advertising circles Sir Miles made his name as an industrialist as a director of Morris Motors from 1927 to 1940, and later as managing director of the Nuffield Organisation until 1947. From 1948 to 1951 he was director of the Colonial Development Corporation, a post which overlapped with his chairmanship of British Overseas Airways Corporation (1949 to 1956).

The head of the Commonwealth's biggest chemical concern, Mr. Stanley Paul Chambers spent 20 years in Government service before joining the I.C.I. main board in 1947. An economist by training, he became one of Britain's leading taxation experts and served as a Commissioner of the Board of Inland Revenue from 1942 until 1947.

★ THIS year marks the fortieth anniversary of Scott Bader and Co. and the tenth anniversary of the community ownership organisation, Scott Bader Commonwealth. A booklet issued to mark these events describes the history of the company and sets forward some of their aims.

Scott Bader were founded by a Swiss clerk, Ernest Bader, and their first venture was as U.K. agents for Swiss Celluloid and later for German high viscous nitrocellulose. In 1930, when industrial depression decreased the margin of movement and thus hitting merchanting concerns badly, Scott Bader decided to manufacture and machinery was installed for the production of pigment pastes.

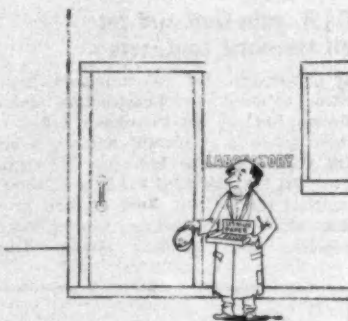
In 1941, the company suffered great losses of property and valuable documents, but by the end of the year another factory had been built. When the war ended the range of products was extended to include Nuodex naphthenate paint driers and fungicides, Texipol acrylic emulsions and Marco polyester resins. These polyesters were the first styrenated polyesters available in Europe.

In 1951, a charitable trust was created called the Scott Bader Commonwealth Ltd., to which the original shareholders of the company gave their stock. The majority of employees are members of

the Commonwealth. Up to 20% of profits can be voted by members to be shared out as a bonus but an equal amount must be given to charity. The remainder is ploughed back into the firm.

★ AN amusingly illustrated booklet on safety in the laboratory has been published by the Geigy Co. Ltd., Manchester. The booklet is intended to form the basis of a general laboratory safety code, and rules are designed for the safe operation of chemical and other processes carried out in the laboratory.

Subjects such as general laboratory housekeeping, laboratory technique, fire prevention, chemical hazards and toxicity are clearly and attractively presented and are lightened by very apt and amusing drawings (one of which is reproduced) by J. N. Stafford, who also designed the booklet.



The cause of safety in the laboratory, too often dealt with in weighty official documents, is well served by this booklet.

★ CHEMISTS and technicians who work in research and control laboratories are doubtless well aware of the wide range of apparatus and materials in general use, but may not know how their needs can best be met. In this respect the 50 or so members of the British Laboratory Ware Association throughout the U.K. provide a useful link between manufacturers of laboratory requisites and research workers.

B.L.W.A. members include most of the old-established laboratory furnishers, some of whom supply goods of their own manufacture. Because they hold stocks of a wide variety for immediate delivery and provide technical staff, they can offer specialised assistance at short notice. This distributor-manufacturer role of association members relieves

manufacturers of making countless deliveries and thus plays an important part in maintaining an economic and efficient service to chemical industry users.

The association was formed just after the first world war to stimulate production in the U.K. of laboratory apparatus, which until then had been produced mainly in Germany and Bohemia. Since then member-firms have done much to help standardise equipment and materials used in the laboratory. A list of members is available from the association at 28 Worple Road, London S.W.19.

★ I HAVE donned the proverbial 'sack-cloth' for having quoted an obvious piece of Soviet propaganda! In my reference (this column, 7 October), I referred to an official Soviet statement that a new Cuban nickel plant would utilise local ores and help the Cuban economy—unlike the expropriated Moa Bay plant of Freeport Sulphur.

The Moa Bay plant, of course, not only utilised nothing but local ores, it also provided a great fillip to the Cuban economy. Moa Bay and its satellite industries gave jobs to 1,300 Cubans, supplied them with the finest medical and educational services, provided top-flight housing facilities, would have been one of the largest taxpayers in Cuba's history and established a new industrial centre where once there had been only wilderness.

Freeport unlocked mineral wealth that had remained inaccessible in terms of metallurgical knowledge since the time of Columbus. In place of those benefits, Cuba now has nothing but idle machinery, since it does not appear that the plant has ever been successfully re-activated.

★ MANY of the islanders who were forced to leave their homes on Tristan da Cunha are happily now settling down well in England. I hear that two of them recently started working in the milling department at Fullers Earth Union Ltd., Redhill, doing despatch and loading. Apart from a fish grinding works on the island, this is the first machinery they have ever seen.

The two men—Dennis Green and John Lindsay Repetto—were taken on by a representative of the company, which is one of the Laporte Industries Group, when he visited Pendell Camp at Merstham, near Redhill. I am told that they have quickly adapted themselves to their new work.

Because of their lack of immunity, most of the islanders have succumbed to heavy colds since their arrival and at the end of Mr. Green's first week at Fullers Earth, his father died the day after going down with a cold.

Alembic

HANDLING OVERSEAS CHEMICAL PROJECTS

Economist studies problems of design, technology and investment

CONSIDERATIONS which influence the size and scope of chemical plants built by British firms abroad, either on their own behalf or for local ownership, are discussed in a survey by Mr. A. B. Abraoz, engineer and economist, Nuffield College, Oxford, and senior researcher at the Institute for Economic Research, Buenos Aires. Writing in the November issue of *The Journal of Industrial Economics*, he concludes that the use of modern techniques is generally desirable in the case of a firm building a plant of a similar size, to its home-based units.

However, if the plant is to be locally owned, either privately or by a Government, there is a case for considering simpler or batch-type processes. This is seen to hold good even for a large plant, if the particular technology allows it.

Reasons given for the adoption of simpler plants are many: the investment will be smaller; possibility of making simple equipment locally would reduce foreign exchange needed; labour costs would probably be lower than for a foreign subsidiary; the simpler process would need less technical skills in maintenance and operation.

Ten firms interviewed

Mr. Abraoz compiled material for his survey by interviewing managers, engineers and operating personnel in 10 firms involved in installing chemical plants overseas. Two of the firms were large chemical contractors with British and foreign customers. The article deals with two aspects of overseas investment—the decision to install a plant abroad and the issues which arise on designing the process plant. Information on the design of other parts of the investment (civil engineering and buildings, finishing processes and auxiliary activities) will be the subject of a future article.

Because of the difficulties of making an accurate economic appraisal, the decision to invest overseas is usually based on an act of faith rather than on cool economic calculations. The economic appraisal is, however, used to ensure that the undertaking is not hopeless.

Many firms interviewed said they would go ahead with an investment which did not promise a very high rate of return at the outset because they felt the market would eventually expand and that they could manufacture other products. One result of uncertain estimates of future sales was that the figure for capacity would tend to be conservative. Designers, therefore, have to consider

the possibility that the plant might have to be expanded shortly after start-up.

After describing aspects of design, Mr. Abraoz says that most firms insist on using the most modern techniques. A number of engineers stressed that although labour might be fairly plentiful in an underdeveloped country, it was not always as cheap as a comparison of straight wage rates might suggest. For one thing, productivity is often lower and for another, large social charges often have to be added. It was felt, too, that wages will rise substantially in a few years.

It was found that firms with little experience in setting up overseas plants tend to reproduce their home plants, while those companies experienced in overseas operations have a more sophisticated approach. One firm aims at establishing the simplest possible design, to include more instrumentation and to adopt continuous operation where these can be economically justified.

One of the important design problems met, arising from the fact that overseas plants tend to serve smaller markets, is the scaling down of processes employed. Most firms have installed scaled-down versions of their home plants even though this imposes minimum limits to size so that in some instances they will run well below capacity for a few years. It is felt that this policy gives better utilisation of materials and utilities, better quality and more ease in future expansion, than if they had installed batch processes.

Simpler processes rejected

A firm which took an opposite view preferred to install simpler processes of the batch type because this meant lower investment, simpler maintenance and more use of cheap labour. However, it was found that prospective overseas clients are unwilling to accept that sort of advice; they want the most advanced techniques and the firm has been forced to accede to such requests to avoid losing clients.

Views on instrumentation were found to differ widely, one important factor being the cost, which could represent up to 20% of the total equipment cost and call for a skilled maintenance force. On the other hand, some firms installed automatic controls to prevent breakdowns brought on by carelessness or the inexperience of local staff.

Discussing growth problems, the author says that with many of the chemical plants built overseas, output is likely to increase steadily for a few years

before any major capital investment has to be made for further expansion. Three reasons for this are:

- (1) Designers may have introduced safety allowances, particularly for new processes. Hedging against technical uncertainties can easily lead to overdesign.
- (2) Existence of imbalances at different points in the process due either to design inaccuracy or because some equipment items were bought in standard sizes, which might be much bigger than the actual need.
- (3) New techniques introduced from a company's research and development department.

For more traditional products, firms stated that their plants were very accurately designed and that output was unlikely to increase without further investment.

Designing for growth

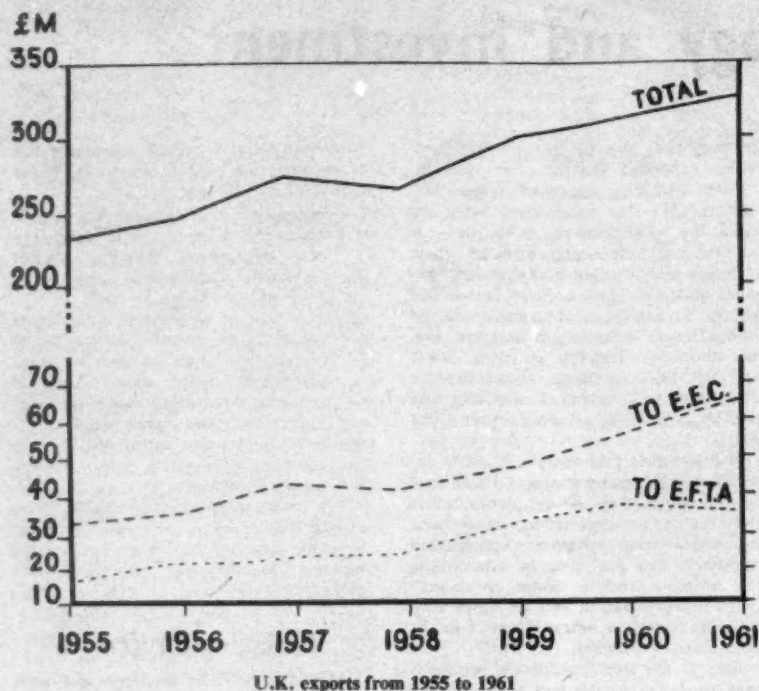
Mr. Abraoz then discusses the ways in which the careful designer can provide for growth in his planning and of the need for flexibility so far as products are concerned.

An important consideration in deciding whether to modify design features of a successful home-based plant is the opinion formed of the efficiency and reliability that can be expected of operating personnel at all levels. Firms operating foreign plants usually train their personnel in British works and keep experienced personnel in key positions until local people gain experience.

The most difficult positions to fill are those at the foreman and middle management level, since in most underdeveloped countries there are no large pools of people with appropriate experience. The two contracting firms felt that a plant owned by a local firm or Government was particularly vulnerable in that maintenance was too often entrusted to men with little experience. There is a lack of responsible and well-trained n.c.o.'s.

Foreign ownership shows important advantages in the running of plant because all the resources of the parent company are readily available. Some of those advantages can be obtained through a licensing arrangement, but perhaps not to the same degree. A local firm or Government agency that has had its plant designed and installed by a chemical contractor is left very much to its own resources for operating it, although the contractors will have taken up the training of the key personnel.

British chemical exports up, imports down in first 10 months



WITH October exports of chemicals £4.6 million higher at £27.9 million, the total for the first 10 months of this year stands at £270.34 million, 4.2% up on the same period of 1960 (£259.2 million).

Exports of plastics in October were up by £440,438 to £3.6 million, but the figure for the first 10 months at £35.3 million, was £473,010 down on the same period of last year.

Chemical imports in October were valued at £13.4 million compared with £13.9 million a year ago, while the total for January-October was £140.9 million, or 2.8% under the 1960 total of £145 million.

Imports of plastics in October, valued at £2.1 million, were higher than the 1960 figure of £2 million, but the 10 months' total, at £22.6 million was £1.6 million down on the same period of last year. Imports of polystyrene in January-October 1960 were valued at £820,878, a steep drop from the comparable figure last year (£1.9 million), but polyamides, at £2.6 million were higher by £700,000.

The graph above shows the trend of U.K. exports of chemicals since 1955, during which time the total has risen from £233 million to an estimated £324 million for 1961. Exports to the European Economic Community, at £31.5 million are expected to top £65 million this year (a rise of over 100%), while shipments to the European Free Trade Association, which totalled £18.4 million

in 1955, should exceed £33 million this year, compared with £35.7 million last year (a rise of 84%). In the graph, estimates for 1961 are based on the results for the first 10 months.

New silicates publication from Crosfield

FIRST issue of a new quarterly publication—*Silicate News*—has been published by Joseph Crosfield and Sons Ltd. Comprehensive coverage is given in the form of abstracts of all developments in silicates, whether home or overseas. New products based on silicates are discussed, and the publication also covers patents and patent applications, as well as long-term research projects.

Silicate News is edited by Link Information Services Ltd., Orchard House, Orchard Street, London W.1, from whom copies may be obtained.

More temporary exemptions for chemicals

Twelve chemicals have been temporarily exempted from import duty from 1 December until 1 January 1963, under the Import Duties (Temporary Exemptions) (No. 8) Order (S.I. 1961/2226). The same order also exempts spiramycin from import duty until 1 March, 1962.

In Parliament

Big prospects for methane scheme

Imports of Saharan natural gas are expected to open up an important new British technology, declared Mr. J. C. George, Parliamentary Secretary, Ministry of Power, in the House of Commons on Tuesday. He described the scheme as "the first real ray of light the gas industry has seen." If expansion hopes were realised, it would provide cheaper gas for export industry, a good change to enable shipbuilders to work on a more competitive basis compared with foreign shipyards, and thus bring benefits to the balance of payments.

London finance for methane tankers

Building of the two tankers which are to import liquid methane from the Sahara is to be financed by London banks and insurance companies. About £10 million is to be raised to build the ships, which will be owned by a subsidiary of Conch International Methane Ltd. (who are owned 40% by Royal Dutch/Shell and 60% by U.S. interests) and Methane Tanker Finance Ltd. (a member of the Houlder Brothers Group).

Fall in U.K. spending by oil companies

PURCHASES in the U.K. of bulk chemicals, catalysts, barytes, etc., by the oil companies in the third quarter of this year totalled £5,803,024, compared with £6,147,703 a year ago and with a 1960 total of £118.9 million, according to the quarterly statistics compiled by the Oil Companies Materials Association and published by the Council of British Manufacturers of Petroleum Equipment.

Chemicals remain the largest item in the oil companies' U.K. purchases. They are followed by specialised refinery equipment, which totalled £2,189,440 (£2,133,110) and tubulars, pipe fittings and valves, £2,069,676 (£2,547,045). Other items of interest included: Pumps (excluding slush, oil well and kerbside), at £361,322 (£505,017) and laboratory equipment and chemicals, £386,986 (£597,750).

I.C.I. to discontinue registration fees

From 1 December, no fee will be payable to I.C.I. on the registration of any transfer or other document of title or on the renewal of any stock certificate in respect of I.C.I.'s ordinary, preference or loan stock.

Morley solvent recovery plant expanded

Oil Recoveries Co. Ltd., Morley, near Leeds, have expanded their plant to deal with the recovery by redistillation and fractionation of used solvents and various high-grade chemicals.

Steel Group line sights on main plant contracting business

A STRONG bid for a stake in the chemical contracting business is being made by Steel and Co. Ltd., Crown Works, Sunderland. Several of the group's subsidiaries already have for the design and fabrication of a wide range of chemical plant and equipment, some of which is made under licensing arrangements. Specialised processes are also available for licensing to chemical manufacturers.

Activities of all group Steel Group companies involved in chemical engineer-



K. B. Ross takes over as managing director on 1 January

ing have now been merged into a new company, Steel Process Plants Ltd., with headquarters at Steel House, Eastcote, Pinner, Middx. Constituent companies of the Steel Group have experience in the design and fabrication of varied equipment for the petroleum, petrochemical, chemical nuclear power food manufacturing, gas and other process industries.

A team of experienced chemists and engineers has been assembled for the design of complete projects and plants for the petroleum, chemical and food processing industries. Head of this team will be Mr. K. B. Ross, a former director of Constructors John Brown Ltd., who leaves his present post as director of operations for the Production Group of the Atomic Energy Authority on 31 December.

The new company will have working capital of £1 million, of which £500,000 is in issued and fully paid-up ordinary shares, the balance being available as needed in the form of loan capital from the parent company.

The group is well equipped for the design, manufacture and installation of large chemical and food processing plant. The Sunderland works can handle the fabrication of sheet, plate and tubes in a range of metals. Modern equipment here includes a new annealing furnace which takes fabrications up to 45 ft. by 14 ft. by 14 ft., with a temperature ceiling of 1050°C.

The spray dryer business of Luwa AG, Zurich, was recently purchased by Steel and these plants are being produced in a new factory at Kirkintilloch, near Glasgow. A specialty is the range of Ultra-Rotor micro-grinders and classifiers which produce powders by air grinding. Steels are also sole U.K.

fabricators of Flexitrays for distillation columns and have other specialised plant items made to their own design or under licence from U.S. and Continental designers.

Other work of this group includes the design and fabrication of heat exchangers, pressure vessels, columns, strippers, scrubbers, gas cleaning plant, towers, coils and piping. The group has companies in the U.S., Canada, Germany, France, Switzerland, India, Australia, Ghana and Nigeria as well as personal representatives in most other countries. This international network, it is claimed, enables projects to be carried out quickly and efficiently in almost any country.

Ability to handle their own fabrication will, it is stated, co-ordinate manu-

facture and put delivery times for industrial plant items within the control of the main contractors.

Construction is now in progress at Crown Works, Sunderland, of new laboratories and a test house, to be staffed by skilled chemists and engineers, in which will be installed full scale process plants for spray drying, micro-grinding, evaporation, distillation and many other unit processes in which tests for customers may be carried out, processes proved, or the efficiency of an item of plant demonstrated. The new test house and research laboratories are opened in May.

Mr. Ross, the new managing director, is a South African by birth, who gained an honours degree in chemistry at Oxford. He joined Anglo Iranian Oil in 1926 becoming general refinery manager at Abadan of British Petroleum in 1951. Before joining the Atomic Energy Authority he was a director of Costain-John Brown Ltd. between 1952 and 1954.

Other directors of Steels Process Plants are R. A. Chasseaud, A. G. Howe, R. Olley and J. Steel.

Pfizer reorganise in U.K., forming consumer products and chemicals divisions

MAIN operations of the U.K. Pfizer Group of companies, except for research and vaccine production, have been reorganised into two divisions. These are the Consumer Products Division (pharmaceuticals, agricultural and proprietary products) and the Chemicals Division (fine and industrial chemicals).



P. V. Colebrook, chairman of Pfizer Ltd.

Each division is controlled by a divisional board.

General manager of the Consumer Products Division is Mr. F. Goulding, a director of Pfizer Ltd. Other members of this divisional board are: Mr. H. J. Bragg, Mr. B. A. Forder, Mr. B. W. Haining, Dr. J. S. Morrison, Mr. R. V. Olsen, Mr. R. A. Paterson and Mr. H. J. Thorne, all of whom have been appointed local directors of Pfizer Ltd.

Joint general managers of the Chemicals Division are Mr. P. A. Gill and Mr. P. J. Platt. Other members of the board are Mr. F. G. Hart, a director of Kemball, Bishop and Co. Ltd., Mr. B. W. Haining, Dr. P. G. Jones and Mr. M. H. J. Villeneuve.

Mr. P. V. Colebrook, chairman and managing director of all Pfizer Group companies, says that the reorganisation

will make for more efficient operation of the divisions created and will enable the main board to pay more attention to longer term policy and planning.

William Butler forms Swedish subsidiary

A SWEDISH company has been formed jointly by Wm. Butler and Co. (Bristol) Ltd., tar distillers and chemical manufacturers and the Swedish firm, Svenska Papperbrukens Handels AB. The new company, called Svenska Malros, will produce resin size for the paper industry in a factory to be built at Borås.

The Swedish company is the principal shareholder, but the know-how will come from Wm. Butler. It is the Swedish company's first manufacturing venture.

Huls cut synthetic rubber price

Bunawerke Huls have announced price reductions of about 5% for their synthetic rubbers. The new price of the standard grade will be DM 211.5/100 kg. and for the oil-extended type will be DM 172.0/100 kg. Huls have given no reason for this latest price cut, but earlier this week had denied London rumours of a reduction.

Obituary

Mr. David Campbell Sheach, a director of Robert Haldane and Co. Ltd., since 1948, has died at the age of 65. He joined the Glasgow office of Chas. Page and Co. Ltd. in 1922, became Manchester manager in 1925 and joined the board in 1947.

Drug chairman says patent policy could hit all inventive industries

PROTEST over the decision to import unlicensed drugs has been more or less continuous since the Minister of Health announced in May that he intended to invoke Section 46 of the Patents Act which enables the Government to avoid the monopoly granted by the issue of a patent.

No chairman's report of a pharmaceutical company has been issued without some comment on the Minister's decision. In the latest, that of Glaxo Laboratories Ltd. (see *CHEMICAL AGE* last week), the chairman, Sir Harry Jephcott, said that what may be a short-term advantage for the National Health Service may, in the long term, become a disaster for the industry.

The main criticism from the industry has been along the lines that research will suffer if companies cannot continue to expect a fair return for the money they have put into the development of new drugs. During 1960 about £7.5 million was spent on research by the pharmaceutical industry.

Now protests are beginning to take a

new form; the more far-reaching effects of the Minister's action are being pointed out. The managing director of Upjohn, Mr. A. A. Smith, comments in a letter to the *Financial Times* that the whole question is a matter of potential damage to all industries which rely on inventiveness for progress. He asks why should India pay British industry for new air navigation equipment if it can be made in Japan.

The argument that any adverse effect on the industry would be short-lived and would stimulate unproved methods of conducting and financing research and may also lead the individual companies to consider diversification is answered by the Beecham Group chairman, Mr. H. G. Lazell. Although, he says, initially, pharmaceutical research investment may come from resources accumulated from profits arising from a diversity of products, the company would never have invested over £2 million in research and some £3 million in manufacturing facilities unless they could have anticipated a reasonable profit from the sale of the products of such research.

New I.U.P.A.C. table of atomic weights is based on carbon-12

THE new table of atomic weights based on carbon-12 instead of oxygen-16 has now been officially released by the International Union of Pure and Applied Chemistry. Carbon-12 was adopted as the standard by the Union in August following similar action by the International Union of Pure and Applied Physics. The new table incorporates the latest information on atomic weights as well as the change in scale.

The atomic weight given for elements which have a variable distribution of isotopes but which are nevertheless fairly stable is that of the material normally handled by chemists—i.e. the value of the naturally occurring distribution of isotopes.

No atomic weights are given for radio-

active elements which have no fixed isotopic composition. A table listing selected isotopes of radioactive elements will be included in the full report of the Commission on Atomic Weights. Atomic weights for several elements which are close to being mononuclidic are given to more significant figures than previously.

Adoption of the carbon-12 scale does not mean that the element carbon has the exact atomic weight of 12. The exact number 12 is taken as the relative atomic mass of the isotope C^{12} . Natural carbon is made up of C^{12} , about 1% of C^{13} and sometimes a trace of C^{14} . Thus the atomic weight of carbon is 12.01115 ± 0.00005 , slightly varied by difference in isotopic distribution.

British Oxygen bid for Calor Gas fails

CHAIRMAN of Calor Gas, Mr. P. Pleydell-Bouverie has confirmed that a merger approach by British Oxygen has been rejected. Calor Gas do not now expect any other bids.

Mr. Pleydell-Bouverie has been quoted as saying that the building of pipelines and natural gas imports may eventually effect the company's transportation of LPG. Currently a quarter of the company's supplies go to industry, but by 1964 this could be doubled.

Calor Gas are expecting orders to follow a recent visit made by Soviet experts to some of their filling stations.

Polyolefin sales higher by 40%

BOARD of Trade statistics issued on Wednesday showed that net sales of British-made plastics materials rose 13% in the third quarter, compared with the same period of 1960. Sales totalled 146,000 tons, compared with 158,000 tons in the previous 1961 quarter.

Sales of polyolefins in the third quarter totalled 33,000 tons (up 40%, mainly due to exports); p.v.c. 25,000 tons and polystyrene, 12,000 tons (up 24% on a year ago). Thermoplastics sales, of 94,000 tons, were up 19% on a year ago, while thermosetting sales, at 52,000 tons, rose only by 4%.

PROJECT NEWS - (Cont'd from page 881)

Hong Kong gasholder contract for Power-Gas

● **C**ONTRACT awarded by the Hong Kong and China Gas Co. Ltd. for a Wiggins dry seal gasholder is the hundredth that the Power-Gas Corporation Ltd., Stockton-on-Tees, have received since they first started to manufacture this type of gasholder in 1950. The holder will have a capacity of 1 million cu. ft. of town gas.

Gasholders of similar capacity are at present under construction by Power-Gas, one of the Davy-Ashmore Group, at the Clyde ironworks of Colvilles Ltd. for the storage of coke-oven gas and at the Rhondda works of the Wales Gas Board for the storage of town gas.

East Midlands Gas Board to reform Saharan gas

● **P**LANT to reform 6 million cu. ft./day of Saharan liquid methane is being planned for a site in Sheffield by the East Midlands Gas Board at a cost of £300,000. The figure of 6 m.c.f.d., which may be stepped up in five to seven years' time, represents 4% of the board's maximum daily output or expressed in another way, 6% of their annual output.

A branch main off the pipeline between Canvey Island and Ellesmere Port will run to the reforming plant.

Just completed for the E.M.G.B. is a pipeline that involved the laying by Constructors John Brown Ltd. of a 24 in. welded steel gas main from Sheffield to Chesterfield.

Flowmeters for South European pipeline

● **S**EVEN 18 in. Pottermeter flowmeters are to be supplied by De Havilland Aircraft Co. Ltd., one of the Hawker Siddeley Group, for the South European pipeline. The contract is worth about £35,000. The flowmeters will monitor the oil-flow through the pipeline from Marseilles to Strasbourg and Karlsruhe.

A.E.I. motors for Danish refinery

● **D**ENMARK's first oil refinery, opened recently, will produce 20,000 barrels daily when in full production. Built by Foster Wheeler and Co. Ltd. for Mr. Paul Getty's Dansk Veedol A/S at Kalundborg, the refinery is equipped with electrical apparatus valued at £210,000 supplied by Associated Electrical Industries.

Hatfield sub-section, R.I.C.

A new Hatfield Sub-section of the London Section, Royal Institute of Chemistry, is to be inaugurated at a meeting to be held at Hatfield Technical College, Roe Green, Hatfield, Herts, at 7.30 p.m. on Wednesday, 13 December. Officers will be elected at this meeting, which will be followed by a short talk by Mr. D. G. Chisman, R.I.C. education officer.

BUTYL MARKETS SURVEYED

Producers believe new demand will justify rising capacities

MANUFACTURERS of butyl rubber are optimistic about the future of this highly resistant and durable rubber. Existing capacity in non-Communist countries is around 179,000 tons, the majority of which is operated by Esso. Humble Oil, the Esso manufacturing company in the U.S., have 131,000 tons capacity, the French company, Société du Caoutchouc Butyl—75% Esso-owned—have 20,000 tons and the other 28,000 tons belongs to Polymer Corp., Canada. Capacity at the end of 1963, when Esso's new plants at Baton Rouge (38,000 tons) and Fawley (30,000 tons) are in operation, will be 247,000 tons. Estimated 1961 butyl consumption is 141,000 tons—5,000 in Canada, 66,000 U.S., 10,000 U.K., 39,000 Europe (excluding U.K.) and 21,000 tons in other non-Communist countries. It is this consumption picture against planned capacity increases which makes some sceptical of butyl makers' optimism.

Butyl rubber was developed by Esso in 1937, and the first commercial plant went into operation in the U.S. in the early part of the war. Its good resistance to ageing and very low gas permeability (only 10% of that shown by other rubbers) made butyl a natural choice for inner tubes and it was in this field and still is, that the greater part of butyl's market lay. Consumption of butyl rubber increased steadily in the U.S. until the introduction of the tubeless tyre in the early 'fifties caused a slump in sales. The same drop was not experienced in the U.K. since butyl rubber was not introduced until after the tubeless tyre had been established.

Apart from its obvious advantages for inner tube production, butyl rubber is a good general purpose rubber. Its higher processing and fabricating cost is offset by its established greater chemical resistance and therefore greater durability in non-transport applications—i.e. in applications other than inner tubes or tyres. High quality tyres are expected to provide a large-scale market for butyl rubber. It is a high hysteresis rubber so that tyres made of the substance give a smoother ride and less noise enabling car manufacturers to cut down on sound proofing. Improved braking is also obtained; a car fitted with butyl rubber tyres can brake in a distance a third less than one using standard tyres. Again, the disadvantage is a higher cost together with a small increase in the consumption of petrol since the rubber also absorbs energy from the car.

Perhaps the main difficulty of butyl is its incompatibility with other rubbers. A number of polymers with slightly different properties are being developed in an effort to overcome this problem. Esso have introduced chlorobutyl rubber,

containing a small percentage of chlorine, which makes the rubber compatible and reduces the curing time. The price is as yet greater than other general purpose rubber but it does retain the advantages of the butyl rubber. Liners for tubeless tyres may provide an outlet for this polymer. Esso anticipate that with an increase in consumption it will be possible to bring the price down. Other modifications are still at the development stage.

With the new developments in butyl rubber, consumption is again on the increase in the U.S. Esso expect the U.K. consumption to double in the next seven to eight years, mainly through its non-transport applications and some development in tyre consumption is anticipated.

The other producers, Polymer Corp., are also confident that the European market holds promise. Although they announced in August that they have abandoned the idea of building a plant in the U.K. they still intend to go ahead with a plant in Europe (see *CHEMICAL AGE* last week, p. 862). A further delay has been encountered due to the patent situation. However, an announcement is expected by the end of the year, according to Dr. R. Rowzee, the president. It is not yet known where the plant will be

sited, but it will have a capacity of between 25,000 and 30,000 tons and will represent an investment of \$18 million. Companies in the U.S. also say they are going ahead with butyl production. Once a joint venture between Cities Services and Thiokol Chemical, was announced early in 1961. A butyl rubber plant will form part of a large \$25 million programme being undertaken by the companies.

Butyl rubber is made by a continuous low temperature process. Isobutylene and a small proportion of isoprene (2 to 3%) are polymerised at -140°F with an aluminium chloride catalyst in a methyl chloride diluent. The polymerisation is practically spontaneous. The reaction is exothermic so that cooling is all important. Low temperatures are usually maintained with liquid ethylene. The polymer is formed as a slurry in methyl chloride and is led off to a flash tank where water is added and the unreacted monomers and the diluent is flashed off and recycled. Control of the polymerisation is obtained by maintaining the reaction conditions and the correct concentration of monomers. This is achieved by extensive instrumentation, including continuous gas analysis, both of the reactor and the flash tank.

Esso hold the basic patents for the process. They originally licensed Polymer Corp. during the war and a number of U.S. companies, including Cities Services, have been granted Esso licenses since Esso's position with regard to patents in the U.K. is such that another company would find it difficult to operate without negotiating licenses.

Letter to the Editor

Experimental work confirms "full validity" of Montecatini's Japanese patent

SIR.—On page 768 of the 11 November 1961 issue of *CHEMICAL AGE* there is reported a news item entitled "Japanese Patent Board asked to rule Montecatini polypropylene invalid".

In the first paragraph, alleged grounds for the request by Shin Nippon Chisso Hiryo Co. are listed. In fairness toward your readers, who might be misled by the statements which are made there, and which were probably mistranslated from a Japanese publication, we would like to point out that there never was any question about our original Japanese patent Showa 2-10596 having been "illegally expanded" or not covering any "significant process for propylene polymerisation" and that Shin Nippon Chisso Hiryo could not therefore, and did not, use these arguments in their request for invalidation of our Japanese patents.

The fact is that Montecatini Co. have discovered the isotactic structure of polyolefins and have invented, developed and patented all over the world the processes for obtaining same.

As regards said original Japanese Montecatini patent, experimental tests performed with the necessary qualifications and skill have proved the incon-

sistency and artfulness of the reasons adduced for requesting the invalidation of same, and have confirmed its full validity.

While we believe it undesirable that questions which are now before the Japanese Patent Office be discussed in the Press, we think, on the other hand, that mis-statements such as the ones pointed out above should be corrected.

Yours, etc.,

BARTOLOMEO ORSONI,

Head, Engineering and Patents Division.

Montecatini, Milan.

(Since the C.A. report of 11 November, we have learned that the Japanese Patent Board has under review a request from Toyo Rayon that the Farbwerke Hoechst patent on the improvement of polypropylene properties be invalidated. This patent is reported to outline the use of zinc oxide and zinc sulphide in addition to the usual stabilising systems based on sulphur compounds. Asahi Chemical have this month been granted a patent (Showa 36-20241) for the continuous polymerisation of polypropylene. Editor.)

Thin link between industry and universities hampers training of chemical engineers

WEAKE spots in the partnership between the chemical industry and the universities were hampering the task of the universities in turning out chemical engineers to meet industrial needs. This was the gist of the message conveyed by Prof. Frank Morton (Department of Chemical Engineering, Manchester College of Science and Technology) in his annual chairman's address to the Manchester Section, Society of Chemical Industry.

Prof. Morton said it had become obvious that despite the very considerable effort made by both industry and the universities, and despite the good will between them, a stage had been reached in their partnership beyond which it seemed difficult to progress. Despite all that was being done, the connecting link between the university and industry was very thin and even this connection was at the top and most pre-occupied part of the organisations.

U.S. "co-operative plan"

Discussing the universities' problems, with particular reference to those anticipated in the Manchester School of Chemical Engineering during the next five years, Prof. Morton said a careful study had been made of the American 'co-operative plan' technique for double usage of facilities. While there was reluctance to make a break with the traditional English university system—and doubts that enough staff to mount such a doubled course could be obtained—this study could not be neglected. An expansion of the degree course to include a general Honours degree combining chemical engineering as the main subject had also been considered. The unknown factor at present was industry's reaction to such an expansion in chemical engineering graduates. How would industry participate in their industrial training—what fields of endeavour would be open to these men once the traditional area of design, development and operation were satisfied—in what additional capacity might they be employed and what variation in the educational discipline might be introduced to meet the expanding fields of interest of graduates. Assuming that industrial requirements were largely satisfied and some surplus of chemical engineers became available, would industry consider a feed back of experienced graduates to build up a reserve of technical manpower as was operated in Germany during the depression of 1932-34?

During the past 12 years in which he had been a professor of chemical engineering, Prof. Morton said, the supply of chemical engineers had never equalled the demand of industry. Now that we

were approaching a situation of almost sufficient chemical engineers it might be hoped that industry would consider the advantages to be gained by seconding a few of its trained men of original minds and youthful outlook to strengthen the research effort of the universities.

Turning to the industrial problem, Prof. Morton said that, obviously, the needs of individual chemical companies varied. But any process which presented the opportunity for further study, either by teams of undergraduates or by staff, would be a welcome exercise on the part of the university. The larger organisations, well equipped with research and

development facilities, may not need their help but could be of great assistance to the universities.

The present partnership broke down at the follow-up stage, and the main reason was the shortage of chemical engineers both in the university and industry. This shortage was now not so acute and was being corrected. Industry could now consider how best to maintain and expand the contacts with universities the senior men had established.

Prof. Morton concluded: "A little effort now could assure a successful future for the partnership between university and the chemical industry. The present partnership established to ensure the creation of schools of chemical engineering, to maintain the standards of the profession and to provide an adequate supply of chemical engineers for industry has successfully completed its task. It is time to review the partnership to ensure that British chemical engineers and the chemical industry they serve do not fail to meet the challenge of our time."

Acrylo tanker holed en route to Europe

DESPITE a collision in the Houston Ship Channel on 7 November in which a number of lives were lost, the Norwegian tanker, *Berean*, with a cargo of 1,500 tons of acrylonitrile, continued her voyage and has this week docked in Rotterdam.

The cargo of acrylonitrile is designed for the U.K. and at the time of the collision with a Chinese freighter, the *Berean* was bound for Port Houston to take on lube oils and chemicals. The tanker was holed in the side and after temporary repairs sailed from Galveston on 15 November.

When *CHEMICAL AGE* gave exclusive news that I.C.I.'s acrylonitrile plant had been shut down (21 October, p. 528) due to inability to compete with drastic U.S. price cuts (from 23 cents to 14¢ cents/lb.), acrylonitrile was temporarily exempted from import duty. At the same time it was understood that I.C.I. had made arrangements to supply their customers during the plant shut-down time while modifications were being made to the process units.

When the plant is on stream again—probably early in 1963—the 33½% import duty is likely to be reimposed. Complaints about low-priced U.S. imports can be expected from West Germany, when Erdolchemie's new 55 million lb./year plant is on stream at Dormagen.

In the meantime, four Japanese acrylonitrile producers, Mitsubishi Chemical, Sumitomo Chemical, Nitto Chemical and Toyo Koatsu, have been told that the Government considers their request for an emergency tariff to halt low-priced imports from the U.S. to be 'reasonable'. This would raise the existing tariff from 20 to 40%.

The imported price is said to be between 160-170 yen/kg. compared with the new Japanese price, cut recently

to 170-180 yen/kg. It is reported that even those Japanese firms using the Sohio process cannot compete with U.S. imports. A cargo of 1,000 tonnes of acrylonitrile produced by Monsanto is now said to be en route to Japan.

Courtaulds to continue Enka yarn production

THE decision to continue the production and processing of textile yarn and the manufacture of tyre fabric at the British Enka factories at Aintree and Bolton has been announced by Courtaulds. The company has, however, decided to close down tyre yarn production in February, 1962. The cellulose film unit will cease production immediately. Courtaulds acquired the majority of British Enka share capital in October.

After February of next year, tyre yarn production will be redeployed at Courtaulds other tyre yarn factories at Preston, Wolverhampton and Carrickfergus.

Nearly 1,000 employees will be affected by the ending of Enka's tyre yarn operations and 90 with the closing down of the film unit.

One-day strike by British Oxygen workers

A one-day strike at the Wembley plant of the British Oxygen Co. Ltd. on Monday affected some 400 men, who accepted union advice to return to work so that wage claim negotiations could continue. The company last week offered a general increase of 3d an hour from 1 January, with a higher rate for certain workers. The claim was for a 6d an hour rise for 4,000 production and transport workers in gas-producing plants.

Overseas News

Soviet scientific councils will co-ordinate research

SCIENTIFIC councils will co-ordinate and plan research on all basic problems of modern science and engineering in the Soviet Union, said Mstislav Keldysh, president of the U.S.S.R. Academy of Sciences, when he addressed a general meeting of the Academy which opened in Moscow on 15 November. The scientific councils, composed of leading Soviet scientists, are to implement the principle of collective leadership in scientific research and increase the part played by scientific circles in organising this research on a national scale, he said.

Speaking of the problems on which the councils will concentrate, he mentioned the search for more efficient methods of transforming various types of energy directly into electricity. "We can already hope to create installations able to transform the chemical energy of fuel into electricity with an efficiency of 70% or more," he added. He spoke of a laboratory thermal element which is already in operation at the Institute of Electrochemistry. From the energy released by an electrochemical reaction this element—"only a few cubic decimetres in size"—generates a current of 120-150 amp., with a voltage of 0.7.

Reorganisation for British Oxygen Canada

British Oxygen Canada Ltd. have undertaken a major reorganisation of marketing operations under the new name of Canadian Oxygen Ltd. Incorporated as divisions, are the former British Oxygen subsidiaries: Northern Welding Supplies Ltd. People's Gas Supply Co. Ltd., St. Lawrence Welding Supplies Ltd., and Advance Welding Supply Co. Canadian Oxygen are to adopt Canox as their official trademark.

Nylon plant for Greece

A new unit producing nylon yarn, built with German co-operation, will shortly go on stream at Pilothei, near Athens. In three years capacity is scheduled to rise to 700 tonnes of yarn a year by 1964.

Stanvac may co-operate in Bombay lube-oil plant

The Government of India is actively considering the setting up of a lube-oil plant in Bombay on a 50-50 basis with Stanvac. According to Mr. K. D. Malaviya, Minister for Oil, a French petrochemicals expert recently addressed Planning Commission members on the establishment of a large complex. The

Government has been thinking of setting up small units in separate zones which might be linked if the problems of availability of raw materials and transport can be solved. The supply of indigenous raw materials will be the deciding factor in the Government's decision.

New commercial method for t.f.e. developed

A new and commercial method for manufacturing tetrafluoroethylene has been developed by the Pennsalt Chemicals Corp., Philadelphia, Pa. A U.S. patent covering the process will be issued shortly.

The new product marks Pennsalt's second entry into the fluorocarbon field in the past 20 months. The first step was the introduction, in March 1960, of Kynar vinylidene fluoride.

Chemische Werke Hüls plan mounting capacities for three major plastics

By 1964, Chemische Werke Hüls plan to replace their current synthetic detergents by biologically soft materials. The company's 1962 capacities will include 80,000 tonnes of p.v.c.; 30,000 tonnes of polystyrene; 6,000 tonnes polythene; and 3,600 tonnes of polypropylene produced by a Ziegler process and Hüls know-how.

Hüls have monthly capacities of 800 tonnes for propylene oxide and 80 tonnes for morpholin. The Faserwerke Hüls synthetic rubber plant is still undergoing trial runs. This year, the associated Bunawerke Hüls are expected to produce 120,000 tonnes of synthetic rubber, almost double the 1960 figure of 66,000 tonnes.

U.S.S.R. may lead in search for defence fibres

That the Soviet Union may have the lead on the U.S. in the development of synthetic fibres furnishing protection against the hazards of chemical, biological and radiological warfare, is the conclusion of the U.S. Army Quartermaster General's research and engineering centre. The centre has evaluated three new Soviet fibres—Enant, Ftlorlon and Vinitron. These, it is said, have higher melting points, superior stress-strain properties and greater inherent chemical resistance than any fibres known in the U.S.

Enant, nylon-7, also has good ultra-

Computer helps plan new projects

Planning and design of new refinery and other plant and calculations connected with laboratory research work, as well as financial reporting and administration of wages and salaries are among applications of a computer system, claimed to be the largest and most up-to-date in the Netherlands, now in operation in the central offices of the Royal Dutch/Shell Group of companies at The Hague.

The unit, consisting of an I.B.M. 7070 computer coupled to a smaller I.B.M. 1401 'satellite', replaces an I.B.M. 650 computer which was installed in 1958. The new unit is more versatile, faster, and has a better 'memory'—10,000 'words' of 10 'positions' against 2,000/10 for the older unit.

Olin and Chemetron change pleas in CO₂ case

Olin Mathieson and Chemetron who, as stated in CHEMICAL AGE, 25 November, p. 850, had pleaded not guilty to charges of price fixing on carbon dioxide, have now pleaded *nolo contendere*, as have Air Reduction and General Dynamics. Sentence is due to be announced on 15 December.

violet resistance. Ftlorlon is a fluorine-containing copolymer that was found to be not as efficient as Du Pont's Teflon as regards heat stability, but better in stress-strain characteristics, while Vinitron (a combination of nitrocellulose with chlorinated p.v.c.) has a high melting point and will not shrink in water.

£A4 m. polythene plant opened in Australia

The new £A4 million polythene plant at Altona, Australia, was officially opened recently by the Premier of Victoria. The plant, which is owned by Union Carbide Australia, is expected to be in full production by December. It has a capacity of 15 million lb. polythene a year.

Loan for Sicilian fertiliser scheme

The European Investment Bank, which covers the six countries of the Common Market, has granted credit totalling U.S.\$1.6 million for the exploitation of a potassium salt deposit in Sicily and the production of potassium fertilisers. The loan is to be advanced through the financial institutes Cassa per il Mezzogiorno and Istituto per il Finanziamento alle Industrie. The project is expected to provide employment for 270 people.

Overseas News

Dow produce stabilised methylene chloride for aerosol paints

A STABILISED methylene chloride especially suitable for aerosol paints has been commercialised by Dow Chemical. The solvent, called Methylene Chloride-S, is stabilised with nitromethane and 1,4-dioxane, which are claimed to reduce attack on aluminium and cut down the number of iron-catalysed reactions. The stabilised compound has the same solvent properties, non-flammability and low toxicity as the unstabilised methylene chloride.

New mine scheduled for Sicily

A new potassium mine will shortly be opened at Contrada, Corvillà, about 4½ miles from Villalarosa in Sicily. Soc. Trinacria, who already have a similar mine at Contrada Pasquasia, will operate the new mine which will have an expected output of 10,000 tonnes a day. Process plant is to be built at Pasquasia.

Tunisian refinery

It has now been officially confirmed that E.N.I. will build the new 1-million tonnes/year refinery at Biserta, which will be operated by Stir, a company set up on a 50/50 basis by the Tunisian Government and E.N.I.

Expansion planned for Norwegian calcium carbide

Odda Smelteverk A/S, subsidiary of the British Oxygen Co. Ltd., are planning to raise calcium carbide capacity by 30,000 tonnes to 80,000 tonnes/year by 1966.

Japanese nylon plant for Formosa

The Japanese company Kabushiki Kaisha are understood to be planning participation to erect a plant in Formosa for the production of nylon.

Ceylon imposes import control on caustic soda

The Government of Ceylon has cancelled all import licences for caustic soda and the item is now subject to individual import licensing. No new orders may be placed or outstanding shipments effected without such a licence which can be issued at the discretion of the controller of imports and exports, based on imports in 1960.

New Soviet preparations stimulate plant growth

It is reported from the U.S.S.R. that by adding a new antibiotic, kormogrizin, to animals' fodder it is possible to step up the growth of young animals by 20-30%.

This preparation was obtained at the U.S.S.R. Academy of Sciences' Institute of Microbiology under the guidance of the Soviet biologist, N. Krasilnikov. The preparation is also claimed to reduce the incidence of disease.

The Institute of Microbiology, jointly with the Institute of Animal Husbandry, is now working out a method of obtaining kormogrizin in large quantities for practical use in livestock farming.

At Moscow University, a new plant

growth stimulator has been isolated from the mycelium of soil fungi. It is hoped that the new stimulator—the effects of which are most pronounced when used on legumes, cabbages and tomatoes—will also help to push these crops further north, into the highlands and desert areas, by ensuring that they mature more quickly.

Allied complete third fluorocarbon plant

Plant with capacity for producing more than 10,000 tons/year of Allied Chemical's Genetron fluorocarbons has been completed at Elizabeth, N.J. Initial production comprises three grades of Genetron gases for use as refrigerants and aerosol propellants: Genetron 12 (dichlorodifluoromethane), 11 (trichloromonofluoromethane) and 22 (monochlorodifluoromethane). This is Allied Chemical's third fluorocarbon unit.

Swiss chemical and drug exports increased 8% in first nine months of 1961

THE Swiss Federal Customs Administration has announced in Berne that over the first nine months of 1961, exports of the Swiss chemical and pharmaceutical industry were higher by some 8% than those for the corresponding 1960 period. With a total value of S.Fr.1,222,200,000 (S.Fr.1,132,100,000), they made up some 19.3% of Switzerland's total exports over the period.

A breakdown into branches of production shows rises in exports from S.Fr.528,500,000 to S.Fr.562,000,000 in the case of chemicals, from S.Fr.305,100,000 to S.Fr.329,600,000 for synthetic organic dyestuffs, from S.Fr.260,000,000 to S.Fr.287,100,000 for pharmaceutical products and from S.Fr.38,200,000 to S.Fr.43,200,000 for perfumes and cosmetics.

The issue of these statistics follows shortly on the 1960/61 annual report of the Swiss Association for Chemical Industry, put at the disposal of CHEMICAL AGE by the Association. This shows exports for the first half of the year—then 20.03% of total Swiss exports—in more detailed form. Of the S.Fr.836,277,000 worth of chemicals exported over that period (compared with S.Fr.1,604,424,000 for the whole of 1960), some S.Fr.227,956,000 came from the export of organic chemical products, S.Fr.227,233,000 from tanning and dyeing extracts, tannins and derivatives, dyestuffs, dyes, paints, lacquers and colouring media, putty and inks and S.Fr.182,736,000 from pharmaceutical products; all of these figures were relatively higher than those for the whole of last year.

Over the first 1961 half-year Switzerland imported chemical products worth some S.Fr.562,653,000, or 9.95% of all imports, as compared with a 1960 whole-year total of S.Fr.1,027,507,000, or 10.66% of the import total. Main imports were in organic chemical products; plastics, cellulose ethers and

esters and products therefrom, rubber, synthetic rubber and rubber goods; and inorganic chemical products and inorganic or organic compounds of precious metals, radioactive elements, rare-earth metals and isotopes.

Federal Germany remains Switzerland's biggest chemical supplier and customer, the figures for the first half of 1961 showing the export to that country of Swiss chemical products worth S.Fr.112,224,000 and the import into Switzerland of West German chemical products worth S.Fr.213,672,000.

These figures are far greater than those for chemical trade between Switzerland and France, the country's second main trading partner in both import and export. The U.K. continues in fourth place for both imports and exports, having exported chemical products worth S.Fr.34,411,000 to Switzerland and imported Swiss chemical products worth S.Fr.49,492,000 over the first half of the current year.

The countries of the Common Market bloc still play a far greater part in the Swiss chemical economy than the E.F.T.A. members, Swiss exports to the C.M. being worth S.Fr.297,622,000, compared with S.Fr.132,939,000 of exports to E.F.T.A. Common Market countries supplied Switzerland with chemical goods worth S.Fr.380,842,000 as against Swiss purchases of E.F.T.A. chemicals totalling no more than S.Fr.50,533,000 over the period January-June 1961.

Nevertheless, E.F.T.A. chemical trade with Switzerland is developing at a faster rate than that of C.M., this actually having slowed down on 1960 whole-year figures in the case of imports into Switzerland.

Although no actual production figures are available for Switzerland, it is possible to reckon them as export totals plus between 5 and 10% in the case of leading chemical commodities in the country's production programme.

● Mr. R. J. Kerr-Muir, Mr. J. H. Givens and Mr. G. A. Samuel have been appointed to the board of British Enka. Mr. A. D. Carmichael, Mr. T. F. Carmichael, Mr. A. J. Engel, Mr. L. H. de Langen, Mr. J. Meynen, Mr. T. S. G. J. M. van Schaik and Mr. M. H. Spieler has resigned as directors. Mr. Kerr-Muir, who becomes chairman of British Enka, is a director of Courtaulds.

● Mr. Irving C. Smith, formerly vice-president of planning and control, Monsanto Chemical Co., St. Louis, has been appointed deputy managing director and a member of the executive committee of Siodison S.p.A., Milan, a company jointly owned by Monsanto and Edison.

● Three employees of the Geigy Company Ltd. were due to receive gold watches to mark 25 years' service at the annual dinner dance of Geigy (Holdings) Ltd., and the Geigy Company on 1 December from Mr. E. G. Turner, chairman of the holding company. They



J. V. Summersgill (left), W. B. Leach (below left) and N. H. Hammersley (below)



are: N. H. Hammersley, commercial officer, Pigmentary Colours Division, who joined the London staff of Geigy in 1936; W. B. Leach, technical representative for the Leather, Textile Dyes Division, who helped set up Geigy Australasia (Pty.) Ltd., in Sydney in 1947; and J. V. Summersgill, technical officer for the Yorkshire area, Textile Dyes Division.

● Professor Dame Kathleen Lonsdale, F.R.S., head of the Department of Crystallography, University College, London, is to be made an hon. D.Sc. at Leicester University at the degree congregation in July next.

● Professor of Chemistry at Sussex University, Brighton, is Dr. Colin Eaborn, reader in physical organic chemistry at Leicester University. Dr. Eaborn is a fellow of the Royal Institute of Chemistry.

● Mr. R. E. Ford has been appointed managing director of International Minerals and Chemicals Ltd., owing to

PEOPLE in the news

the return of Mr. W. T. Bradley to the U.S. where he has taken up an appointment with their American parent company in Skokie, Ill. Mr. John Leyden has also been appointed to the board. Mr. Leyden is already on the board of Tororo Industrial Chemicals and Fertilisers Ltd., Uganda.

● Mr. R. Vernon-Harcourt, formerly a senior chemist in the research and technical department of the British Petroleum Co. Ltd., has been appointed manager of the Petroleum Chemicals Department's sales branch. He joined B.P. in 1957 after experience with other chemical companies.

● Dr. A. G. Gaydon, F.R.S., hon. lecturer at Imperial College, has been appointed professor of molecular spectroscopy in the University of London.

● Mr. M. D. J. Brisby has been appointed a director of W. S. Atkins and Partners, consulting engineers, London.



Mayor of St. Marylebone inspects a model of the Gulf Oil Danish refinery with Mr. Frank Leibrecht, president, Kellogg International Corporation, before officially opening the new Kellogg House on 22 November (see C.A., 25 November, p. 852, and 11 November, p. 761)

● Mr. D. A. Whyatt has been appointed group marketing manager of the Amber Group of companies. Besides taking overall responsibility for all aspects of marketing, he will continue as manager of the Pressurised Dispenser Division of Amber Oils Ltd., which is concerned with the development of new aerosol products and new applications.

● Mr. J. S. Secker, section manager of the polypropylene plant at I.C.I. Wilton Works, has been appointed assistant works manager at the Plastics Division's Hillhouse Works, near Blackpool. Mr. N. D. McLeod, section manager of the Butakon plant at Wilton is now also responsible for the polypropylene plant.

● Dr. A. E. Bender, research chief with Bovril Ltd., is now head of a newly set-up research and development department at Farley's Infant Food Ltd.

● Dr. J. Howlett, head of the computing group of the Theoretical Physics Division, Atomic Energy Research Establishment, Harwell, has been appointed head of the Atlas computer laboratory of the National Institute for Research in Nuclear Science, Harwell. This laboratory, to be built adjacent to the Institute's Rutherford high energy laboratory, will house an Atlas electronic digital computer.



W. K. Ashcroft, market research manager of Howards of Ilford (see 'People' last week)

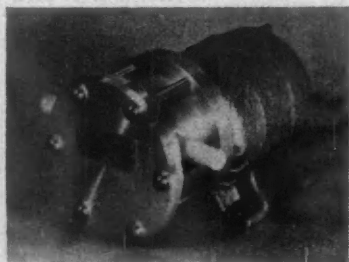
● Dr. R. Binks has been appointed lecturer in organic chemistry at the University of Bristol. He was formerly research assistant in organic chemistry at the same university.

● In the reorganisation of Constructors John Brown Ltd. under the sole managing directorship of Mr. J. A. R. Staniforth, a Sales Group has been formed under the control of Dr. Mark Guter, sales manager technical, Mr. F. P. Korn, sales manager commercial, and Mr. M. R. K. Garnett, general manager sales co-ordination. The Project Group now includes construction services as well as all aspects of engineering and is jointly controlled by Mr. H. W. J. Connor, general manager contracts, and Mr. P. Batterley, general manager engineering. A management committee is now responsible for the day-to-day running of the company. It comprises Mr. Staniforth, Mr. R. C. Odams, technical director, Mr. Bowler, pipelines director, Mr. Connor, Mr. Batterley, Mr. Garnett, Dr. Guter, Mr. J. R. Smyth, financial controller, Mr. McLaren, chief accountant, and Mr. A. T. Dewar, general manager, special duties.

Equipment news and trends

SOMETHING quite new in circulating pumps for corrosive liquids is a glandless, valveless, shaftless and sealless unit constructed entirely in any rigid or flexible material—including p.t.f.e., polypropylene, nylon, Delrin, nitrile and natural rubbers, and other materials, both metallic and non-metallic.

In the Orbital Lobe pump, as it is called, the pumping action is induced by the lobe, driven in an orbital path



Orbital lobe pump

by the orbital converter inside the pump body. The orbital converter is housed in its cover and is actually on the outside of the body. If the pump is made in a rigid material, the orbital converter cover has a bellows section, but if a flexible material is used, it is moulded in one piece with the lobe. In either case it allows deformation to take up the orbital motion without stressing.

Series 3 pumps, immediately available, have capacities up to 110 g.p.h. and pumping heads up to 30 p.s.i. Series 5 models have capacities up to 360 g.p.h. Smaller models are being offered for early delivery and larger ones under development.

The Watson-Marlow Air Pump Co., Marlow, Bucks.

New type of stirring motor is of particular use in the preparation of chemicals involving the use of liquids with high viscosity, since it has variable speed adjustment and can also produce high torque at low speeds through a reduction gearbox. Features include a dynamically balanced armature in sleeve bearings

and integral fan cooling, while the combined bracket and bosshead permits the stirrer to be aligned in three different planes at right angles.

Griffin and George Ltd., Ealing Road, Alperton, Wembley, Middx.

Miniature relief valve for corrosive gases or liquids has a dust-excluding flap valve incorporated in the top cap. Valve is in non-magnetic stainless steel, the valve seat material depending on the application. Seating is protected against overload by a central core stop.

High Pressure Components Ltd., Colham Mill Road, West Drayton, Middx.

Series of automatic fraction collectors for chromatography have a new type of collector plate in grade BH Permalloy densified wood laminate, the material being impregnated with a special synthetic resin formulation to give acid resistance as well as strength, rigidity, good surface appearance and easy cleaning. A double-track fraction collector unit caters for large runs in continuous analysis processes; collector plate in this instance has a double row of holes for the collector tubes and a novel zig-zag mechanism swings the funnel, through which the controlled volumes of effluent pass, alternately over the inner and outer holes.

The Central Ignition Co. Ltd., 287a Liverpool Road, Nondon N.1.

Ideal for laboratory and pilot work is the Speedivac SPS centrifugal freeze dryer, which has been introduced to replace the L5 series, now out of production. The new unit offers just about double the drying capacity, having alternative maximum ampoule loadings of 12 by 2.5 ml. or 48 by 0.5 ml. The phosphorus pentoxide desiccant chamber has been considerably enlarged, increasing the total permissible water load to 30 ml.

Edwards High Vacuum Ltd., Manor Royal, Crawley, Sussex.

Constant temperature 'on tap' is provided for by a new range of constant temperature baths and circulators for applications in the range -80 to +300°C. Design features make them particularly suitable as 'reservoirs' of constant temperature liquid for circulation to external apparatus—viscometers, calibrating baths, etc.

Shandon Scientific Co. Ltd., 6 Cromwell Place, London S.W.7.

Automatic extraction of tramp iron or iron contamination powdered and granular materials is possible with the Unimag non-electric, permanent magnet drum separator. Available in sizes from 9 to 36 in. diameter and widths of 6 in. to 8 ft., these units can be fed by controlled gravity feed chutes or trucking,

vibratory feed chutes, or built into conveyor belts as the conveyor head drum.

Industrial Magnets Ltd., 28 Station Road, Acocks Green, Birmingham 27.

For chilling water for industrial processes, and for cooling other liquids and gases, sometimes to zero temperatures, a new chilling unit combines compactness with simple, 'uncluttered' design. Available from 1½ to 22½ h.p., large packaged units can be supplied with different layouts.

Carter Thermal Engineering Ltd., Redhill Works, Birmingham 25.

On-the-spot pH readings can be taken in vats, tanks, and in small or deep vessels with a portable pH meter, the Austrian-produced Seibold model GET, with a pointed shock-resistant electrode designed for pH measurements of semi-solid materials, a high alkali electrode and a round-nosed shock-resistant electrode also being available.

The H. G. Stevens Co. Ltd., 16 Coverdale Road, London N.W.2.

Low pressure hydrogenator complete with controlled heating unit is based on the manufacturers' standard design of low pressure catalyst hydrogenator with glass bottle, suitable for pressures up to 45 p.s.i. Reactions can now be speeded up by the addition of the metal heating band surrounding the bottle, temperature being controlled by potentiometer.

Chas. W. Cook and Sons Ltd., Walsall Road, Perry Barr, Birmingham 20.

Based on epoxy resins, inert fillers and aggregates, Prodorflor flooring composition can be applied by spreading or trowelling to give a chemical resistance, liquid tight and impervious surface with good resistance to wear for both foot and wheeled traffic.

Prodorite Ltd., Eagle Works, Wednesbury, Staffs.

Adaptable to meet a wide variety of requirements for totalling the weight of material passing over a conveyor belt is a new range of belt weighing machines designed to fit into an existing conveyor system and suitable for either horizontal or inclined installations. Totalised weight is shown on a seven-figure counter, while pendulum type indication provides continuous indication of feed rate.

W. and T. Avery Ltd., Soho Foundry, Birmingham 40.

For further information on any products reviewed here, either write direct to the firms mentioned or to CHEMICAL AGE, 154 Fleet Street, London E.C.4.

Commercial News

Anchor Chemical

From 1 December 1961 the trading activities of Anchor Chemical's subsidiary, United Oil and Natural Gas Products Corp., will be carried on directly by Anchor Chemical Co.

British Enkalon

Dealings began on 30 November in the issue of ordinary 5s shares of British Enkalon. A total of 15 million ordinary shares are involved at a value of £3.75 million. Algemene Kunstzijde Unie N.V., have taken up 8,226,014 shares, representing the 54.84% holding they held in British Enka before the Courtauld's bid. The rest of the shares have been offered to other British Enka shareholders registered in 17 October at 5s 6d each. The offer is open until 21 December.

McKechie Brothers

Net profit of McKechie Brothers for the year ended 31 July was £740,592 (£770,652) and a dividend equal to 1½% (same equivalent) and a tax-free distribution of 3% (3½% equivalent) has been declared. Capital spending amounted to £445,514, of which £329,000 was spent in the U.K. and the balance overseas. For the first three months in the current year, group trading profit has been comparable with the same period last year. In spite of uncertainties on the home market, Mr. J. D. McKechie, chairman, says that the group looks forward to continued expansion.

Allied Chemical

Allied Chemical Corporation, one of the leading U.S. chemical producers, are to merge with the Union Texas Natural Gas Corporation. The latter company will supply Allied with base material for petrochemical production. This follows by a few days a statement that the two companies were jointly to build a petrochemical plant costing up to \$60 million at Geismar, La. It is understood that one Union Texas share will be exchanged for ¾ Allied shares. The transaction will involve some \$350 million.

American Cyanamid

American Cyanamid have declared a third quarter dividend of 40 cents/shares (same).

Anglo-Lautaro

Profit of Anglo-Lautaro Nitrate Corporation for the year ended 30 June totalled \$930,451 (\$1,908,648), equivalent to 21 cents per 'A' share (43 cents). Dividend on the 'A' shares is 20 cents (40 cents), with *pro rata* payments on 'B' and 'C' shares. The cut in earnings was due to a two months' strike, and to growing disparity between internal Chilean costs and exchange rates for the currencies generated by the sale of products in world markets.

- Allied's petrochemical merger
- Anglo-Lautaro Nitrate profits halved
- I.C.I.A.N.Z. see signs of economic recovery
- 11% Rise forecast for Bayer turnover

The modernisation scheme to reduce costs has now been largely completed. The directors state that the new investments greatly exceed the commitments undertaken in 1954.

Colonial Sugar

Although Colonial Sugar Refining Co. maintained their profits from their Australasian sugar interests in the half-year to September, profits from the Chemicals Division were depressed.

Cyanamid D.H.A.

American Cyanamid and Drug Houses of Australia have formed Cyanamid D.H.A. Pty in Melbourne with nominal capital of A£5 million.

Dow Chemical Co.

Dow Chemical Co., U.S., announce a quarterly dividend for the last three-month period of 40 U.S. cents (same).

Fabelta

Fabelta has proposed a net dividend of B.Fr. 600 per share for the year ended 30 June 1961 (B.Fr. 500). Net earnings totalled B.Fr. 89.9 million (69.83 million).

I.C.I.A.N.Z.

Consolidated profits of Imperial Chemical Industries of Australia and New Zealand for the year ended 30 September were £A2,135,000 (£A3,082,000). Tax took £A1,572,000 (£A2,451,000). Dividend on ordinary is maintained at 7%.

Sales declined from £A53 million to £A59 million, due to reduced activity in many sections of the industry and to lower selling prices. It is stated that recent signs indicate a recovery in the economy, but increased business expected is likely to be affected by severe competition from imports.

Bayer

Farbenfabriken Bayer AG, Leverkusen, estimate 1961 turnover at over DM3,000 million (1960: DM2,820 million), sales being up by some 11% quantitatively and by some 7% in value. Total group turnover will be some 10% up on the 1960 figure at about DM3,600 million. Share of exports in total turnover is put for 1961 at 45.4% (44.8%), some 59% (57.9%) of total exports going to European countries. About 26.7% (25.2%) of total exports will have gone to other Common Market countries and 21.3% (22.4%) of the total to E.F.T.A.

Over last year, home sales will rise by some 6.2%, those to all foreign countries by 10%, those to Common Market countries alone by 16.9% and

those to E.F.T.A. countries alone by 3.8%. All of these increased rates are lower than those for 1960 over 1959.

Above-average turnover increase is expected in 1961 for plastics, fully synthetic fibres, photochemicals, pharmaceutical specialities and veterinary products. Over 1961 Bayer sales prices are expected to fall by 3 to 4% below those for 1960; fall for 1960 from 1959 levels was of 1.8%.

Total investments of Bayer and 100%-owned subsidiaries will be in the region of DM480 million (1960: DM403,800,000) and depreciation some DM254 million (1960: DM236 million). It is expected that DM440 million will be invested in 1962, stresspoints of investment being basically the same as those this year (plastics and plastics based production, intermediates, dyestuffs, synthetic fibres, Agfa camera works, laboratories and power plants), plus the further expansion of the Uerdingen chlorine electrolysis units. Over 1961 some DM140 million or 4.7% of expected turnover, will have been spent on research, as compared with DM124,600,000 (4.5%) in 1960.

Jefferson Lake Sulphur

The Canadian-based Jefferson Lake Sulphur Co. and their subsidiaries (Jefferson Lake Petrochemicals of Canada Ltd., and Jefferson Lake Asbestos Corporation) had consolidated net earnings in the nine months ended 30 September of \$659,200 (\$175,855) or 78 (16) cents/share. Jefferson Lake Sulphur themselves had a net income of \$500,861 after non-recurring charges of \$181,627 for the shutdown of three sulphur operations.

Jefferson Lake Petrochemicals—69% owned by Jefferson Lake Sulphur, had earnings of \$242,643 (Canadian) or 12 cents/share. Jefferson Lake Asbestos has not yet begun operations.

The Calgary, Alberta, plant of Petrogas Processing Ltd.—31% owned by Jefferson Lake Petrochemicals—is nearing completion ahead of schedule at a cost of about \$500,000 less than the estimated \$13.3 million.

Kaiser

Kaiser Aluminium and Chemical Corporation, U.S., announce a payment for the past quarter-year of a quarterly dividend of 22½ U.S. cents/share (same).

Ledoga

Net profit of Ledoga S.p.A., Milan, for year ended 30 June was 810,670,000 Lire (1,042 million Lire). This followed depreciation of 102.4 million (124 million) Lire and special

(Continued on page 894)

Allied Chemical form new U.K. company; Indian venture for Constructors John Brown

expenditure of 314 million Lire to cover flood damage at Darfo works. Dividend is 12% (same). Turnover rose 9.36%, that of foreign holdings by as much as 23.3%, though both these increase rates were below those of 1959/60 over 1958/59. The pharmaceutical sector was at a disadvantage by the compulsory dropping of Italian prices; three tanning acid plants had to be closed due to over-high production costs.

Royal Dutch Salt

First nine months' results of the Royal Dutch Salt Group are expected to be about the same as for the same period of 1960 it is stated in an interim report. Results for the whole of 1961 should be favourable.

Tessenderloo

The Belgian chemical company Produits Chimiques de Tessenderloo announce for the financial year ended 31 August 1961, a net profit of B.Fr. 96,800,000 (B.Fr. 92,200,000). Net dividend is B.Fr. 210.00 (B.Fr. 157.50).

NEW COMPANIES

ACE CHEMICAL AND ENGINEERING COMPANY LTD. Cap. £100. Consultant chemists and chemical engineers, etc. Directors: F. C. van der Vyver and P. W. Warren. Reg. office: 1 Caslon Street, London E.C.1.

ADHESIVES DEVELOPMENT CO. LTD. Cap. £100. Manufacturers of and dealers in glues, glue stocks, pastes, adhesives, waterproofings, compositions, chemicals and drugs, etc. Directors: M. A. Phillips, C. J. Burton. Reg. office: 16 Curzon Street, London W.1.

ALLIED CHEMICAL (GREAT BRITAIN) LTD. Cap. £100. Manufacturers of and dealers in chemicals, etc. Directors: John W. Pearce, John W. Sharman. Secretary: J. W. Sharman. Reg. office: 23 Blomfield Street, London E.C.2.

BLAYSON-OLEFINS LTD. Cap. £100. Manufacturers of and dealers in commodities; to acquire and develop processes for rendering substances and materials proof against or repellent to liquids or gases, etc. Subscribers: P. Wright and Doris Lock, 18 Mansfield Street, London W.1.

BORN HEATERS LTD. Cap. £5,000. Manufacturers of and dealers machinery and plant for process heating in the oil and chemical industries. Reg. office: 3 London Wall Buildings, London E.C.2.

C.J.B. (INDIA) LTD. Cap. £100. To carry on in India, the U.K. or elsewhere the business of consulting, chemical, water, fluid, gas, pipeline, welding, anti-corrosion, instrumentation, process engineers, and contractors, etc. Directors: J. R. Smith, A. McLaren. Reg. office:

C.J.B. House, Eastbourne Terrace, Paddington, London W.2.

KARWEL AND HALEY LTD. Cap. £1,000. Designers and consultants in the manufacture engineering equipment, chemical and petroleum plants, etc. Directors: J. S. Karwel, N. Haley. Reg. office: 141 Streatham High Road, London S.W.16.

INCREASES OF CAPITAL

LEDOGA S.P.A., Milan. Capital is to be increased from 8,000 million lire to 12,000 million lire due to an investment programme requiring expenditure of 5,500 million lire in Italy and 6,500 million lire elsewhere.

TREIBACHER CHEMISCHE WERKE AG, Austria. Capital is to be increased from Sch.30 million to Sch.40 million, with a later increase to Sch. 50 million. At the same time a State holding in the company is being sold.

SOCIETÀ ASFALTI BITUMI CEMENTI E DERIVATI (A.B.C.D.), of Palermo, Italy, the petrochemical producers connected with the Bombrini chemical group of Rome, have raised their capital from 3,000 million to 5,000 million lire by the issue of 200,000 shares of 10,000 lire face value at a rate of 2:3 to shareholders. The new capital is to support petrochemical production development by the company.

SURFACE PROTECTION LTD., chemical preparation manufacturers, etc., 18 London Street, London E.C.3. Increased by £35,000 beyond the registered capital of £40,000.

Market Reports

NEW INTEREST EXPECTED IN COMING WEEKS

LONDON Trade in industrial chemicals has been maintained at about recent levels with a steady flow of new inquiry both for home and export. Delivery specifications against existing commitments have covered good quantities and the next few weeks should see some interest developing in forward contract renewal business.

Conditions in the market for fertiliser materials have been satisfactory with good inquiry continuing for basic slag.

There has been little change on the coal tar products. Cresylic acid, creosote oil and the naphthalenes are in steady call, while pitch is in demand on the home market with a fair export interest.

MANCHESTER Price movements on the Manchester market have been few and of relatively little consequence. On the home side, while there is room for improvement in the demand for cotton bleaching, dyeing and finishing materials,

TRADE NOTES

Rubber accelerator

A new data sheet has been issued by Robinson Bros. Ltd., Ryders Green, West Bromwich, on Robac Thiuram P25 (dipentamethylene thiuram tetrasulphide) which is a combined vulcanising agent and accelerator for sulphurless cures of natural, nitrile rubbers, butyl rubber and latex. It includes new information on butyl rubbers.

Union Oxide and Chemical

The business of Union Oxide and Chemical Co. Ltd., recently moved into the new offices of the parent company, C. Tennant Sons and Co. Ltd. at 9 Harp Lane, Great Tower Street, London E.C.3, was merged with that of Tennant's Chemical Department on 1 December. Trading is now carried on as the Union Oxide and Chemical Division of C. Tennant, Sons and Co. Telephone number is Mansion House 4533; Telex, London 23636.

Laporte group products

A 56-page catalogue just published by Laporte Industries Ltd. lists nearly 300 chemicals manufactured by companies in the Laporte Group, from acetylsalicylic acid B.P. to zirconium organic compounds. Brief particulars of home and export packages are also given. As well as products of the U.K. companies, the publication covers products of subsidiaries in Australia, Canada and West Germany. Copies available from the L.I.L. Group Publicity Department, 1-5 New Bond Street, London W.1.

U.C. tantalum capacitors

The Kemet division of Union Carbide are now marketing an extensive range of solid tantalum capacitors.

the call for most industrial chemicals, including solvents and plasticisers, is reasonably steady, and satisfactory deliveries are going forward against contract commitments. There is also a fair movement on overseas account, a falling off in the demand for some of the soda compounds and a few other products having been offset by improvements in other directions.

SCOTLAND A fairly active week's trading is the report from the Scottish market. Buying for home requirements have been well maintained at current levels both in quantities and volume of demands received.

Chemicals for the textile industries have featured well this past week. Enquiries received have shown interest particularly in respect of requirements for 1962. Prices generally have shown little change. The position in regard to exports is satisfactory with a good volume of inquiries still being received.

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Bookshelf

Extraction techniques in processing of nuclear fuels

CHEMICAL PROCESSING OF REACTOR FUELS. Edited by *J. F. Flegg*. Academic Press, New York and London, 1961. Pp. xi+530. 125s.

In this first volume of a series on nuclear science and technology fifteen contributors have written accounts on various aspects of nuclear fuel processing, solvent extraction processes, criticality and a few other related topics. The first three chapters contain condensed accounts of the techniques that are used to prepare U and Th compounds from their ores and the preparation of aqueous solutions of spent nuclear fuels prior to separations and recoveries by wet extraction methods. Detailed descriptions of these extractions occupy about one third of the book, the main features covered being general principles of solvent extraction, TBP and hexone extractions, plant equipment and outlines of other extractants and ion-exchangers. The remaining chapters contain a full account of all aspects of criticality and the chief methods of effluent processing.

It has been the main intention of the authors to write for students of nuclear engineering, engineers and scientists concerned with atomic energy production and for those who wish to benefit from the knowledge about metal extractions and separations that has been gained by working with nuclear fuels. Although these objectives have been achieved the price is going to restrict the number of private purchasers.

► Stability constants

THE DETERMINATION OF STABILITY CONSTANTS. By *F. J. C. Rossotti* and *H. Rossotti*. McGraw-Hill Publishing Co. Ltd., London and New York, 1961. Pp. xiv + 425. 97s.

Quantitative studies of stepwise complex formation between cations (M) and anionic ligands (A) by using high concentrations of 'inert' salts so that a wide range of A can be used without being troubled by varying activity coefficients have been developed by Scandinavian chemists since about 1900. In recent times this work has received wider recognition and there have been strong developments in both experiment and theory. The authors of the present book have made important contributions in this field and this is reflected in the highly competent way in which they have assembled and presented their subject. The theory is developed in a systematic fashion and once one has mastered the symbol definitions and principles of the first five chapters, the following 13 chapters on experimental methods can be clearly comprehended.

This second section deals with potentiometry, polarography, solubility, liquid-liquid partition, ion exchange, vapour pressure, optical methods, reaction kinetics and a variety of special methods. Besides giving complete accounts of experimental features, methods of computing stability constants are explained with great clarity. Polynuclear systems and mixed complexes, which are dealt with in the last three chapters are also handled in a most polished manner.

While basically this is a reference book for research students and will be regarded by them as a 'classic', teachers and students reading for honours degrees will find this a most useful foundation and introduction into this branch of ionic solutions.

► Physical chemistry

ANNUAL REVIEW OF PHYSICAL CHEMISTRY VOL. 12. Edited by *H. Eyring*. Annual Reviews Inc., Palo Alto, 1961. Pp. viii + 514. \$7.00.

Reviews of the volumes in this excellent series are by now superfluous. The articles are universally recognised by physical chemists as authoritative surveys of their fields. The editors are to be congratulated for maintaining their high standards for a dozen volumes. This volume is incidentally probably the first to contain no article by an author writing from the U.K. The editors now appear to be giving more space to special topics that appear infrequently and less to regular annual articles. Less than half of the topics treated this year were reviewed under the same headings one year ago.

The only suggestion for development suggests itself is that a few more articles that suggests itself is that a few more articles with specifically inorganic bias should be included.

► Organic peroxides

ORGANIC PEROXIDES: THEIR FORMATION AND REACTIONS. By *E. G. E. Hawkins*. Spon, London, 1961. Pp. xiv + 434. 80s.

Until the recent publication of the book on organic peroxides. It is unfortunate for both authors and publishers that two books on the same subject should appear so close together. Nevertheless most libraries and many individuals working in the field will wish to own both volumes. Hawkins, as befits an employee of the Distillers Co., pays more attention to industrial aspects of the chemistry and to the patent literature. He is less concerned with the systematic description of types of reactions involving peroxides. Accordingly each of his chapters, except the last deals with a

particular class of peroxide. The last chapter of 55 pages is concerned with autoxidation of a great variety of substances.

The treatment throughout is systematic and clearly great pains have been taken to include references to all the literature up to the end of 1959. The reader can confidently use the book for reference. The price is low for a book of this size with many typeset formulae.

► Macromolecules

PHYSICAL CHEMISTRY OF MACROMOLECULES. By *Charles Tanford*. Pp. xiv + 710. John Wiley and Sons, London, 1961. 144s.

This impressive volume is an attempt to summarise the physicochemical studies of polymer systems. The various sections and the number of pages they comprise are: Molecular structure (123); Molecular statistics (42); Thermodynamics (95); Light scattering (42); Transport processes (140); Ionic behaviour (69); Multiple equilibria (61); Kinetic processes (84); Mathematical appendices (10).

The treatment is at a level appropriate to an Honours Course presentation—e.g. a brief summary of the principals of X-ray diffraction is presented in vector notation in 20 pages; this is followed by 36 pages of a well-illustrated qualitative account of the results for a series of polymers, including a description of the Fourier projection for myoglobin. Similarly condensed presentations of up-to-date material are made in the other sections.

The volume is very well produced and is particularly well illustrated by good diagrams and some photo-prints. Each chapter carries selected general and many other references to recent research literature. It provides an excellent survey for specialist students.

ORGANIC PEROXIDES

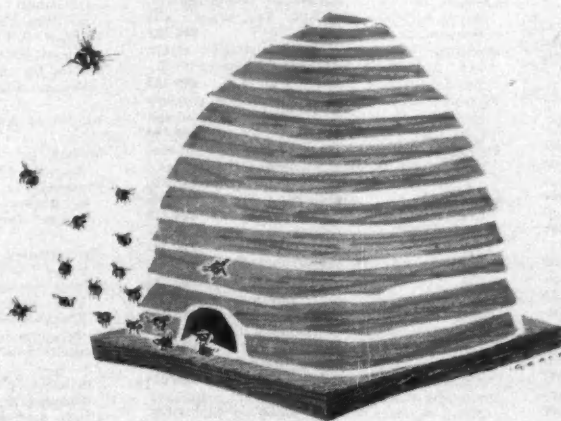
A. G. Davies

Price 50s.

Academic and industrial interest in the organic peroxides is widespread and increasing rapidly, but, up until now, no comprehensive account of the chemistry of these compounds has been available. This book will undoubtedly fill the gap. Both the practical and theoretical aspects of the formation and reactions of the peroxides are discussed, and many tables of the more important classes of compounds are included

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NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

AMENDED SPECIFICATIONS

On sale 20 December

Stabilised composition containing simple synthetic Vitamin A material. Eastman Kodak Co. **884 984**

On sale 27 December

Polyester resins. Albright & Wilson (Mfg.) Ltd. **862 539**

ACCEPTANCES

Open to public inspection 27 December

Cyclic esters of arylboronic acids and processes for their preparation. Soc. de l'Institut de Sérotherapie Hemopoietique. [Addition to 873 817.] **885 766**

Boron phosphate catalyst composition. Universal Oil Products Co. **885 866**

Amino-guanidine preparation. Francais Etat. **885 575**

Production of epsilon-caprolactam. Union Carbide Corp. **885 335**

Production of ammonium salts of organic carboxylic acids or ester-acids. Chemische Werke Witten GmbH. **885 576**

Treatment of unsaturated polyester resins. Rütgerswerke AG. **885 577**

Preparation of solid polymers of olefins. Sun Oil Co. **885 869**

Detergent compositions. Shell Internationale Research Maatschappij N.V. **885 870**

Derivatives of 3-phenyl-spiro-(2H,1-benzopyran-2,2'(2'H,1'-benzopyran)). National Cash Register Co. **885 768**

Imidazole-quinones. Farbenfabriken Bayer AG. **885 578**

Process for the manufacture of carbonyl sulphide. Socony Mobil Oil Co. **885 871**

Methods of producing polyvinyl esters. Kurashiki Rayon Kabushiki Kaisha. **885 623**

Removal of acetylenes from butadiene-rich streams. Esso Research & Engineering Co. **885 625**

Tetrafluoroethylene resins and their preparation. Du Pont de Nemours & Co., E. I. **885 809**

N,N'-diethylene-N¹¹-substituted phosphoramides and process for preparation. American Cyanamid Co. **885 370**

Production of alkenyl aromatic compounds. Ciba Ltd. **885 872**

Solvent extraction processes. Shell Internationale Research Maatschappij N.V. **885 810**

Cross-linked aromatic vinyl co-polymers. Farbenfabriken Bayer AG. [Divided out of 885 719.] **885 720**

Antibacterial agents. Beecham Research Laboratories. [Divided out of 885 424.] **885 425**

Open to public inspection 3 January

Polymerisation process and catalyst therefor. Dunlop Rubber Co. Ltd. **886 288**

Metallisable azo dyestuffs and metalliferous complexes derived therefrom. Compagnie Française des Matières Colorantes. **885 920**

Method of preparing synthetic staple fibres. Montecatini. [Addition to 810 023.] **885 971**

Elastomers obtained from substantially amorphous polymers and copolymers of alpha olefins and a process for their preparation. Montecatini. **885 969**

Uniform coagulation of latex-carbon black mixtures. Phillips Petroleum Co. **886 967**

Reserpine-like compounds. Sandoz Ltd. **886 272**

Nitroaryl silanes and nitroaryl-polyisiloxanes and process from the production thereof. Union Carbide Corp. **886 048**

Arylsulphonyl acylonitriles and compositions containing same. Monsanto Chemical Co. **886 154**

Method of producing hydrogen compounds under the action of electric glow discharges. Berghaus, B. **886 155**

Process for the manufacture of aldehydes or ketones. Consortium für Elektrochemische Industrie GmbH. **886 157**

Method of separating carbamoyl-alkyl, O,O-dialkylphosphorodithioates. American Cyanamid Co. **886 177, 886 319**

Oxidation of materials under the action of electrical glow discharges. Berghaus, B. **886 156**

Thermoplastic compositions. Monsanto Chemical Co. **886 343**

Aminosilicon treated metals and methods of treatment and production. Union Carbide Corp. **886 109**

Production of silicon halides: British Titan Products Co. Ltd. **886 344**

Method of separating and recovering carbon dioxide from gaseous mixtures. Vetrotec S.p.A. **886 346**

Catalysts and to a process of polymerisation. British Petroleum Co. Ltd., Yeo, A. A., and Wenham, A. J. M. **886 182**

Quaternary salts of tropine compounds. Smith Ltd., T. & H., Smith, J. M., Haining, C. G., and Johnston, R. G. **886 183**

Pyrazolo-pyrimidines substituted in the pyrazole nucleus, and process for their manufacture. Ciba Ltd. **886 184**

Process for the manufacture of polyvinyl chloride capable of being slit. Farbwerke Hoechst AG. **885 926**

Spiro-m-dioxane compounds. Union Carbide Corp. **886 410**

Production of unsaturated ketones. Distillers Co. Ltd. **886 353**

Catalytic process. Imperial Chemical Industries Ltd. **886 186**

Fertiliser compositions. Scottish Agricultural Industries Ltd. **886 411**

Detergent compositions. Hedley & Co., Thomas. **886 188**

Manufacture of polyurethane materials. Imperial Chemical Industries Ltd. **886 029**

Aminoplast-polyester condensation products. Rohm & Haas Co. [Addition to 815 179.] **886 190**

Production of aerosols. Vihorlat, Narodni Podnik. **886 031**

Production of epoxides. Newby, H. (Chemische Werke Hüls AG). **886 164**

Production of aliphatic carboxylic acids. Imperial Chemical Industries Ltd. **886 324**

Reforming hydrocarbons. Socony Mobil Oil Co. Inc. **886 280**

α -(β -Hydroxyethylamino)-propiophenone, its production and its conversion into β -phenyl- α -methylidethanolamine and 2-phenyl-3-methylmorpholine. Industria Chimica Profarmo S.R.L. **886 035**

Carbon black slurries. Phillips Petroleum Co. **885 968**

Phenthazine derivatives. Rhone-Poulenc. **886 037**

Methods for preparing mouldable exothermic products. Soc. a.r.l. Doittan Produits Metalurgie. **886 328**

Steroid esters. Ciba Ltd. **886 040**

Recovery of helium from gas mixtures. British Oxygen Co. Ltd. **886 043**

Method and plant for the production of dicarboxylic acids or anhydrides thereof. Jager, Fabrik Chemischer Rohstoffe GmbH, Ernst. **886 208**

Steroids and the manufacture thereof. Upjohn Co. **886 080**

Pressure sensitive adhesives. Adhesive Tapes Ltd. **886 003**

Polymerisation process and catalyst therefor. National Distillers & Chemical Corp. **886 085**

Aqueous hypochlorite solution containing a hypochlorite-resistant perfume. Domestos Ltd. **886 084**

Steroids and the manufacture thereof. Upjohn Co. **886 390**

Production of liquid olefin polymers. Cosden Petroleum Corp. **886 134**

Methacrylic resin plates and a process for their production. F. Lli Guzzini. **886 130**

Metal alkylboron compounds. Ethyl Corp. **886 392**

Process for the production of ethylene and its homologues. Du Pont de Nemours & Co., E. I. **886 006**

Thiourea compounds and process for their manufacture. Ciba Ltd. **886 090**

Catalysts, and a process of polymerisation using an improved catalyst. British Petroleum Co. Ltd., Yeo, A. A., and Hambling, J. K. **886 168**

Process for the production of methine dyestuffs. Farbenfabriken Bayer AG. **886 091**

Weather-resistant synthetic resin paints. Farbenfabriken Bayer AG. **886 362**

Process for the preparation of unsaturated esters and alcohols. Shell Internationale Research Maatschappij N.V. **886 131**

Polymerisation of alpha-olefins and catalysts therefor. Sun Oil Co. **886 093**

Diiodo-pyridones and compositions containing them. Cilag Chemie AG. **886 094**

Hydrazinium salts, their production, and pharmaceutical compositions containing them. Grace & Co. **885 960**

Process for the manufacture of unsaturated alcohols and acyl derivatives thereof. Hoffmann-La Roche & Co. AG, F. **886 364**

Process for separating carbon monoxide from gaseous mixtures. Farbwerke Hoechst AG. **886 338**

Vinyl sulphonic esters. Badische Anilin- & Soda-Fabrik AG. **886 365**

Chlorination of zirconium oxide. Columbia Southern Chemical Corp. **885 955**

Trialkyl 9(10)-phosphonostereates. Albright & Wilson (Mfg.) Ltd. **885 956**

Process for the manufacture of anhydrous magnesium chloride. Knapsack-Griesheim AG. **886 212**

Reinforced resins. Esso Research & Engineering Co. **886 069**

Method for the purification of hexamethylenediamine. Chemstrand Corp. **886 071**

Production of metal oxides, especially iron oxides, by combustion of the corresponding metal carbonyls. Badische Anilin- & Soda-Fabrik AG. **886 216**

Hydrogenated binaphthyls and their preparation. Union Carbide Corp. **886 367**

Process for the manufacture of reaction products from phosphoric acid and sodium carbonate. Knapsack-Griesheim AG. **886 217**

Stabilisation of polyolefins. Sun Oil Co. **886 218**

Organo-silicon compounds. Dow Corning Corp. **886 140**

Electrolytic production of sodium. Du Pont de Nemours & Co., E. I. **885 980**

Disazo dyestuffs containing haloacylamino groups. Cassella Farbwerke Mainkur AG. [Divided out of 886 379.] **886 380**

Monazo dyestuffs containing haloacylamino groups. Cassella Farbwerke Mainkur AG. [Divided out of 886 379.] **886 381**

Organic polymeric structures. Du Pont de Nemours & Co., E. I. **885 986**

Soluble catalysts for ethylene-alpha-olefin copolymer rubbers. United States Rubber Co. **886 368**

Process for polymerising ethylenically unsaturated hydrocarbons and a process for preparing catalyst therefor. Shell Internationale Research Maatschappij N.V. **886 371**

Reserpine-like compounds. Sandoz Ltd. [Divided out of 886 272.] **886 273**

Census of production 1961

As was announced in the *Board of Trade Journal* of 15 March, the Census of Production to be taken in 1962 for the year 1961 will be a sample inquiry and the questions asked will relate only to sales and work done, capital expenditure, and stocks and work in progress. In addition to this information, firms will be required to give details of their sales direct to the public (e.g. by mail order, to own employees, etc.). This information will complement that obtained in the Census of Distribution for 1961 and will be used to improve the estimates of consumers' expenditure.

An order prescribing the matters about which returns may be required has now been made by the Board of Trade. Undertakings producing coal, gas, electricity, oil-shale, crude or refined petroleum or shale oil products are exempted from making Census of Production returns.

GLANVILL BENN
Chairman
BENN BROTHERS LIMITED

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Graham M. B. Esq.,
Messrs. B. B. B. B. B. Ltd.,
104-110, F. C. 2.

21 November 1961.

Dear Mr Advertiser

During the past three or four years more advertising people than ever have taken personal interest in the National Advertising Benevolent Society and its work. Two most welcome effects have followed - advertising men and women in difficulties are brought to the notice of the Society in increasing numbers, and the list of our subscribers is growing steadily.

The first effect means that more and more money is needed to give the relief and ease of mind for which NABS is constituted. As I write, we are helping 287 adults and caring for 62 children.

This is justification enough for asking for generous support - but there is also a project in hand that will make a very personal appeal to each of us. NABS moves ahead with its plan for a home for the elderly; a home that is to give individual homes in which the older ones will make their own atmosphere.

Already we have the land, and that has not been easy to find. But this means that we have taken the first and most important step in what must be a long term project. It will involve a big expenditure.

So as this year's President, I appeal for NABS with confidence. We need your generous help.

Yours sincerely,
Glanvill Benn

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Applicants should be graduates or hold equivalent qualifications. Experience in the synthetic resin field whilst desirable is not essential. Recently qualified chemists will be considered.

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TECHNICAL MANAGER,
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BELVEDERE, KENT.

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Barron 'U' Sifter Mixer 96 in. by 33 in. by 33 in. with 10 H.P. A.C. Motor.

Gardner 'U' Sifter-Mixers 66 in. by 24 in. by 24 in. with 5 H.P. A.C. Motors. Four available, of modern streamlined design.

Horizontal 'U' Trough Mixers 48 in. by 18 in. by 22 in. Three—Tilting type, Paddle Blades. Glanded.

Over-Arm Twin-Blade, Tilting, 30 gallon Mixers with 3 H.P. Geared Motors. Five available.

Lying at our No. 2 Depot, Willow Tree Works, Swallowfield, Berkshire.

Apply: Winkworth Machinery Limited, 65 High Street, Staines, Middlesex. Telephone 55951.

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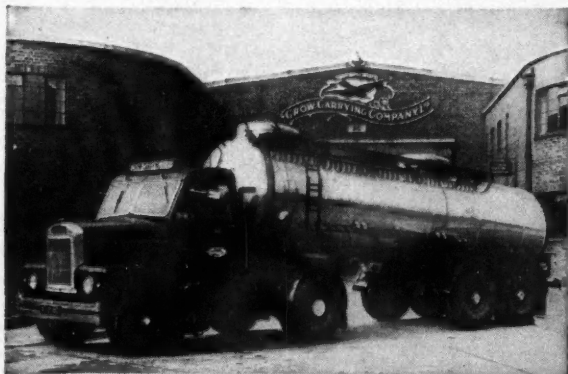
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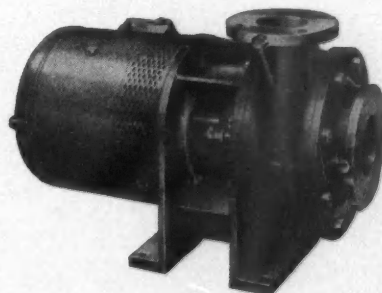
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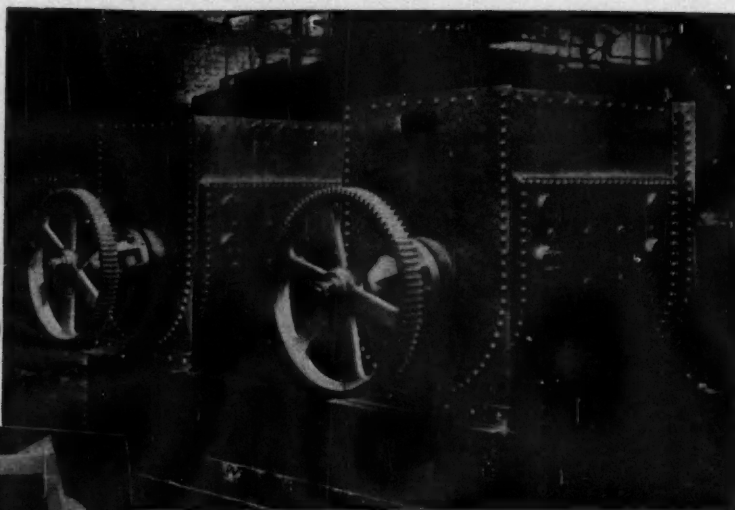
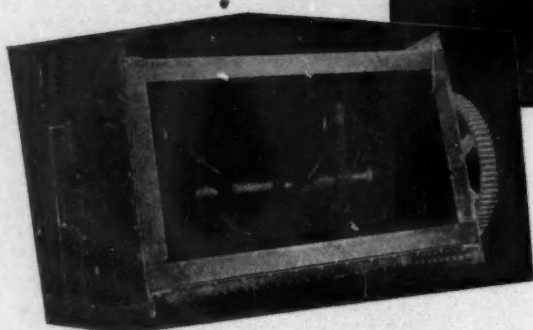
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